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# CAR LINES

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## EUROPE

### 1. European Summer Ozone: Record Low Concentrations In 2009

Ozone levels in Europe during summer 2009 were among the lowest since comprehensive data reporting started in 1997. Eighteen EU Member States reported exceeding the information threshold (ozone concentrations over 180 µg/m<sup>3</sup>), with Belgium, Greece, Italy and Portugal recording the largest number of exceedances. As in most previous years, no station in northern Europe registered information threshold exceedances.

Eight EU Member States (Bulgaria, France, Greece, Italy, Portugal, Romania, Spain and the United Kingdom) reported exceeding the alert threshold (ozone concentrations of 240 µg/m<sup>3</sup>).

The record lows in 2009 came despite average summer temperatures close to those measured in the extremely hot summer of 2003, which witnessed the highest number of exceedances in the last decade. The differing results in the two summers may be attributable to several factors because ozone formation is determined by various meteorological conditions, as well as the chemical composition of the atmosphere. It seems likely, however, that reductions in anthropogenic ozone precursor gas emissions in Europe contributed significantly to the general decrease in peak ozone concentrations.

For the first time since 1997, no concentration higher than 300 µg/m<sup>3</sup> was reported. The highest one-hour ozone concentration (284 µg/m<sup>3</sup>) was observed in France.

In contrast to previous summers, in 2009 there were no widespread multi-day episodes. Summer 2009 was characterized by ozone episodes of between two and five days followed by spells with few exceedances.

EU Directive 2002/3/EC sets the long-term objectives for reducing ground-level ozone pollution to protect human health and the environment: an alert threshold (240 µg/m<sup>3</sup>) and an information threshold (180 µg/m<sup>3</sup>). Member States must report exceedances of both thresholds to the European Commission and the European Environment Agency.

As in all previous years, the Directive's long-term objective to protect human health (maximum ozone concentration of 120 µg/m<sup>3</sup> over 8-hours) was exceeded in all EU Member States and other European countries.

### 2. Dutch Question Euro V Benefits in Urban Areas

Lorries meeting Euro V pollution standards emit three times more NO<sub>x</sub> than they are supposed to in urban areas, according to a Dutch note citing a study released by T&O in February. EU countries may struggle to meet air quality targets as a result, the note states. Dutch officials are also worried this will make it harder to meet national emission ceilings for NO<sub>x</sub> and nature conservation targets. Euro V trucks in urban areas are only marginally cleaner than Euro III vehicles, the T&O study has found--even though the Euro V NO<sub>x</sub> standard is 60% lower than the Euro III standard. The emissions approached the regulated levels only during highway driving, at speeds of about 80 km/h and above.

The findings are in line with a recent study from Sweden, say the Dutch officials. The Netherlands wants EU environment ministers to back its call to take the findings into account for

Euro VI standards for trucks. Rules for implementing the standards are being developed under comitology and Dutch officials requested that PEMS (portable emission measurement system) measurements be included in the Euro VI comitology regulation currently being prepared by the European Commission. The problem is that the Euro standards are set on the basis of laboratory tests. These appear to correspond well to conditions for motorway driving, but not urban driving.

In their note, published by the Council of Ministers, the Dutch also suggest the European Commission should negotiate an agreement with lorry manufacturers to modify the calibration software of Euro V vehicles to better reflect actual driving conditions. Jos Dings of green group T&E said the Dutch proposals are the best solution given the Euro V standards are already set in law and the vehicle type approval system cannot be changed because the EU is in transition from a European to an international system.

The issue was considered at the European Council on March 15, 2010. It remains uncertain if the Commission will act on the Dutch requests.

The study involved PEMS emission measurements from seven Euro V trucks (six with urea-SCR and one with EGR) operated on the same route. To compare NOx emissions from different trucks and under different speeds and conditions, the authors used grams of NOx per one kg of CO<sub>2</sub>.

In the past, real life NOx emission factors from European heavy-duty trucks were believed to be 10-15% above the regulatory levels. According to the new study, the in-use NOx emissions are much higher, especially in city driving, as shown in the following table.

Emission Factors from EU III and EU V Trucks, g NOx/kg CO<sub>2</sub>

	Standard	Old Factors		New Factors	
		City	Motorway	City	Motorway
Euro III	7.5	8 - 9	8 - 8.5	13	11
Euro V	3.1	3.5	3 - 3.5	10	4

The highest low speed NOx levels were measured in the trucks with SCR systems. The EGR truck produced lower NOx than the SCR trucks, but it also exceeded the standard at lower speeds. NOx emissions from the SCR trucks generally started decreasing to approach the regulatory level at speeds of 60-80 km/h.

In addition to the trucks, one EEV bus was tested in the study, which produced NOx emissions at or below the Euro V regulatory levels at all speeds.

### 3. Plans Announced To Tackle Pollution on London's Dirtiest Roads

The Mayor of London has set out detailed plans to tackle air pollution hotspots to ensure London meets legal targets for particulate matter by 2011 and that 250 km of the dirtiest roads meet NO<sub>2</sub> legal targets by 2015.

'Clearing the Air', the Mayor's Air Quality Strategy, is now out for public consultation, with a range of pollution-busting measures to reduce concentrations of particulate matter (PM<sub>10</sub>) by an estimated 10 to 20 per cent at priority areas in central London. These include: Marylebone Road, Euston Road, Marble Arch, Hyde Park Corner, Victoria Embankment, Upper Thames Street and

Tower Hill. The latest figures show London is on track to meet PM<sub>10</sub> legal limits by 2011, but these areas have been identified as being most at risk of breaching limits when weather conditions are poor.

Actions to target these areas will be undertaken in partnership with local boroughs and Transport for London following months of detailed discussion. Potential solutions that could be applied depending on each location include:

- Power washing the roads to remove harmful particulates from traffic;
- Applying dust suppressants on road surfaces;
- Changes to signal timings to smooth the flow of traffic;
- Planting green walls and trees to absorb particulates and to protect pedestrians;
- No-idling enforcement to stop people leaving their engine running for long periods;
- Deploying the cleanest buses along these routes.

In addition, the strategy proposes measures to clean up roads across London so that 250 km more of London's roads will meet legal targets for NO<sub>2</sub> by 2015 which would otherwise have breached these limits. This includes retrofitting older buses with equipment to bring them up to cleaner Euro 4 standards for NOx and the introduction of a new NOx standard for larger vehicles that have to comply with the Low Emission Zone standards.

The Mayor has also proposed that - subject to statutory public consultation on the implementation date - the oldest, most polluting heavier vans and minibuses will be included in the Low Emission Zone from January 2012.

In addition, the Mayor has committed to work with the vehicle manufacturing industry to develop an affordable black cab that emits 60 per cent less pollution by 2015, and a zero-emission black cab by 2020. The Mayor has proposed to introduce age limits for taxis and minicabs to ensure the most polluting of these vehicles are removed from London's roads subject to consultation with the taxi and Private Hire Vehicle trade.

The Mayor is also discussing with London Councils how the London Lorry Control Scheme can be used to incentivize a cleaner 'London lorry' standard that will deliver substantial improvements in freight emissions.

This is in addition to over £250m that the Greater London Authority (GLA) is already spending on measures, which are improving the capital's air quality.

Air quality is an issue that affects all cities and towns across the country. The recent House of Commons Environmental Audit Committee report estimated that air pollution could be contributing to as many as 50,000 deaths in the UK per year. Early results of a study commissioned by the Mayor to be published later this year suggests that around 4,300 people a year in London could be dying prematurely, mainly as a result of the impact of poor air quality on pre-existing conditions such as asthma, heart disease and respiratory illness.

The Mayor has joined the Committee in calling on the Government to commit the resources necessary to reduce the enormous burden air pollution places on organizations such as the NHS and to implement national measures where they are most effective: such as a national framework for certifying vehicle retrofitting and raising public awareness of the challenges faced in tackling air quality, incentives for fleet managers to retrofit their vehicles to make them cleaner, an extended vehicle scrappage scheme targeted at particular vehicle types (e.g., vans,

minibuses and taxis) and better-coordinated and funded energy efficiency schemes for homes and workplaces and electrification of London's rail network.

Mayor Boris Johnson also said: "London simply cannot crack this pressing problem alone, not least because a significant amount of pollution is blown in from outside our boundaries. It is estimated that air quality is contributing to the deaths of up to 50,000 people every year across the UK. That is why I am calling on the Government to implement and provide adequate funding for initiatives that will tackle pollution in London. We've set out specific measures we're calling on Government to adopt that we believe will enable compliance with all limit values.' In general, 40 per cent of PM<sub>10</sub> concentrations in central London and 20 per cent of NO<sub>2</sub> concentrations in Greater London are caused by emissions coming from outside London.

These detailed proposals form part of a public draft of the Mayor's air quality action plan, which is now open to consultation. The strategy outlines the key sources of London's harmful airborne pollutants and proposes an action plan to reduce emissions. The pollutants of particular concern are nitrogen dioxide (NO<sub>2</sub>) and particulate matter (PM<sub>10</sub>) - road transport is the main source of emissions - with emissions from gas used in homes and businesses also a large contributor of NO<sub>2</sub>.

The Mayor is already implementing a range of measures in London to improve air quality such as introducing a hybrid bus fleet, record levels of investment in cycling and programs to cut domestic and commercial emissions. The New Bus for London, due to enter service in 2012, will incorporate the latest hybrid technology and will be both 40 per cent more fuel efficient than conventional diesel buses and 15 per cent more fuel efficient than current London hybrid buses.

The Mayor also has ambitious plans to make London the electric vehicle capital of Europe - this took a major step forward recently with the confirmation of up to £17 million additional funding for electric vehicle infrastructure. This will deliver a network of around 7,500 charging points by spring 2013 with around 1,600 charge points to be installed over the next 12 months.

Implementation of the policies and proposals in the strategy is expected to reduce PM<sub>10</sub> emissions in central London by around 13 per cent by 2011 and by about a third by 2015 (compared to 2008). Together with the targeted local measures in priority areas, modeling suggests that this will allow London to be compliant with legal limits by 2011. The strategy will also see NO<sub>x</sub> emissions fall by 35 per cent by 2015 (compared to 2008 levels). However, NO<sub>2</sub> is a national issue requiring further action from central Government. The Mayor is calling on the Government to introduce national measures, which will deliver benefits in London and across the country. Together with the measures in the Mayor's strategy, these will meet NO<sub>2</sub> limit values in London by 2015.

Key measures contained in the public consultation draft of the Mayor's Air Quality Strategy 'Clearing the Air' include:

- Further smarter travel schemes to encourage shift to cleaner modes where possible;
- Targeted package of measures for air quality 'hotspots';
- Retrofitting older buses so that they meet the Euro IV standard for NO<sub>x</sub>;
- Introducing vans and minibuses to the LEZ from January 2012 (see below);
- Introducing a NO<sub>x</sub> standard into the LEZ from 2015;
- Updating and implementing guidance for reducing dust at construction and demolition sites;
- Using the planning system to make new developments 'air quality neutral';
- Energy efficiency programs to reduce emissions from heating of homes and workplaces;

- Information campaigns to raise awareness of air quality issues.

#### **4. Judge Rules More Study Needed Before Heathrow Plan Can Be Approved**

Environmentalists opposed to a third runway at London's Heathrow airport claimed victory after a British judge ruled the government must review the project's climate change and economic impact.

The Labor government gave the go-ahead in January 2009 for a third runway and another terminal at Europe's busiest airport as part of a 9 billion pound (\$13.4 billion) expansion. But the project has run into fierce opposition and a legal challenge from local residents and environmentalists concerned about noise and increased carbon emissions.

The opposition Conservatives oppose plans for a third runway at Heathrow, whose operator BAA is majority owned by Spain's Grupo Ferrovial.

High Court judge Robert Carnwath said the government's argument that the policy of support for the third runway had been set in 2003, subject to the fulfillment of three environmental conditions, was "untenable." The government must prepare a national policy statement, required to establish the case for major infrastructure projects, before the expansion can go ahead.

Carnwath said the preparation of the statement "will necessarily involve a review of all the relevant policy issues including the impact of climate change policy." He said the national policy statement would also have to consider the economic impact of a third runway as increases in carbon costs would have a "significant effect on the economic picture."

Opponents of the plan, including local councils and environmentalists, said the ruling meant that the government would have to "go back to square one and reconsider the entire case for the runway" if it wanted to pursue its plans for Heathrow expansion.

#### **5. Green Concerns over EU Fuel Quality Legislation**

Twelve environmental groups have raised concerns over a proposal for calculating the life-cycle greenhouse gas (GHG) intensity of fossil fuels under the 2009 fuel quality directive. The law requires a 10% cut in GHG intensity by 2020.

In a letter to the European Commission, the groups say the current draft only contains one single default GHG value for all fossil fuels. This means oil refiners would be able to buy low-quality crude oil or crude from producers with high extraction emissions and still get the same default value.

"Extraction emissions, particularly flaring, vary significantly from region to region and field to field," T&E said in a position paper published last year as part of a commission consultation. Fuels from tar sands emit three times more GHG than conventional oil, according to the 12 green groups.

Article 7a of the fuel quality directive states that suppliers can reduce their fuels' GHG intensity either by improving the production processes for fossil fuels, for example improving refineries' efficiency and reducing flaring and venting, or by switching to alternative fuels such as biofuels, natural gas and electricity.



As it stands, the proposal would undermine efforts to cut transport emissions, the groups say. They make several recommendations to improve the proposal, including a set of conservative default values for different sources of crude oil and incentives for investing in better technology and switching to cleaner fuels.

## **6. "Environmental Damage" From Indirect Land Use Raises Concerns About Biofuels**

Biodiesel and other "green" fuels that Europeans put in their cars can have unintended consequences for tropical forests and wetlands, European Union reports show. The EU aims for its 500 million citizens to get about a tenth of their road fuels from renewable sources such as biofuels by 2020, but some EU officials want the target reduced in a review as modeling exercises are starting to show unwanted impacts spreading across the planet.

"The simulated effects of EU biofuels policies imply a considerable shock to agricultural commodity markets," warns one draft report produced to advise policymakers. "Current and future support of biofuels...is likely to accelerate the expansion of land under crops, particularly in Latin America and Asia," warns another.

The warnings are not new as environmentalists have been making them for years.

But the impact studies and emails show for the first time that European policymakers are also seriously worried about the impact on tropical forests, wetlands and savannah. However, they are struggling to quantify the likely damage.

"The large amount of documents and their detailed content show the Commission have been considering indirect land use change impacts very seriously," said a spokeswoman for European Energy Commissioner Guenther Oettinger. "There is no definitive and official answer on the size or character of this issue at this stage," she added.

In the European Commission officials are split over the wisdom of continuing with a target that was set in 2008 and has already prompted billions of dollars of investment globally. One internal letter from an agriculture official reported on by the press warns that taking account of the full carbon footprint of biofuels could "kill" an EU industry worth about 5 billion Euros a year (\$6.8 billion).

At the center of the debate is "indirect land use change," which has put palm oil producers in Malaysia and Indonesia in the cross-hairs of environmentalists.

Critics say that regardless of where they are grown, biofuels compete for land with food crops, forcing farmers worldwide to expand into areas never farmed before -- sometimes by hacking into tropical rainforest or draining peat lands. Satisfying the EU's thirst for biofuels would need 5.2 million hectares of land by 2020, reads one report -- a bigger area than the Netherlands. Burning forests to clear the land can pump vast quantities of climate-warming emissions into the atmosphere, cancelling out any theoretical climate benefit from the fuel. Iconic species such as Orangutans are also put under renewed pressure.

Draining peat lands can have a similar impact as soils rot and release methane gas into the atmosphere. If just 2.4 percent of European biofuels came from palm oil grown on former peat

lands, for example in Indonesia, the entire climate benefits of EU biodiesel would be wiped out, says a report by the Commission's research center.

If the issue wasn't complicated enough, policymakers will have to take account of numerous mitigating factors. Increased demand for the cereals and oil seeds from which biofuels are made does not always result in farmers expanding agricultural land. Sometimes they can increase yield by using fertilizers, pesticides and irrigation.

The EU's most comprehensive biofuels modeling exercise yet was recently made public, but is based on having just 5.6 percent of biofuel in road fuels. Experts say the 10 percent figure was shaved to 5.6 percent partly by exaggerating the contribution of electric cars in 2020. They also say the study exaggerates to around 50 percent the contribution of bioethanol -- the greenest of all biofuels -- and consequently downplays the worst impacts of biodiesel.

"Indirect land use change effects do indeed offset part of the emission benefits, but are not a threat at the currently estimated volume of 5.6 percent of road transport fuels required," a European Commission statement said. The report said that if the amount of biofuels were raised above 5.6 percent, "there is a real risk that indirect land use change could undermine the environmental viability of biofuels."

Vegetable oils can be used in biodiesel, which has led to worries of increasing food prices as food crops get diverted to feed Europe's growing car fleet. But the study found little initial impact. "The effect of EU biofuels policies on food prices will remain very limited, with a maximum price change on the food bundle of plus 0.5 percent in Brazil and plus 0.14 percent in Europe," according to the analysis. This finding contradicts other studies carried out by the European Commission, which showed that EU biofuel targets could raise the price of cereals and vegetable oils by 10 percent and 35 percent respectively, creating food shortages in the developing world.

## **7. MEPs Urge Specific GHG Value for Dirtiest Fuels**

A coalition of MEPs has joined a call for a specific default value for calculating the life-cycle greenhouse gas (GHG) intensity of the dirtiest fossil fuels under the 2009 fuel quality directive. Draft implementing measures being developed under the directive contain just one default GHG value for petrol and one for diesel, the MEPs said in a letter to the European Commission on Tuesday. It echoes concerns raised by green groups; for example, environmentalists say fuels from tar sands emit more CO<sub>2</sub>.

"There are currently no provisions to take into account high carbon crude oil, such as tar sands or oil shale," the MEPs said. A specific default GHG value for the most carbon intensive fuels would create an incentive to resort to cleaner oil extraction techniques.

"While the imports of [fuels from tar sands] to the EU market may be small at the moment, we are concerned that this might change in the near future due to immense reserves of this dirty source of crude oil in Canada and in several other countries," the letter says.

The biodiesel sector has also complained that a proposed default value for emissions from diesel grossly underestimates real-life emissions, in part because it takes inadequate account of the growing popularity of more intensive extraction techniques.

Europa wants specific values for diesel, gasoline and liquid petroleum gas plus compressed natural gas, gas-to-liquids and coal-to-liquids. This is not the same as the source-based default values being proposed by green groups and the MEPs.

## **8. Biofuel Findings Put Pressure on EU Commission to Change Policy**

The European Commission is under pressure to alter EU-wide agreed targets of replacing 10 percent of fossil fuels with renewable energy by 2020, as its own internal studies have proven that biofuels have a negative impact on the environment and food production. EU energy commissioner Guenther Oettinger is considering a re-think of policies towards spurring the use of biofuels gained from crops such as rapeseed and palm oil, as they can lead to mass deforestation and food supply disruptions, Financial Times Deutschland reports.

Parts of the internal study were published by the EU executive, amid growing pressure from MEPs and environmental groups. It continued to make the case for biofuels, but capped the "sustainability" level at 5.6 percent of traditional fossil fuels, suggesting that a higher percentage would harm the environment and endanger food crops, as they would compete for the same farm land.

Biofuels such as biodiesel from soy beans can create up to four times more climate-warming emissions than standard diesel or petrol, according to an EU document released under freedom of information laws.

Chief among those fears is that biofuel production soaks up grain from global commodity markets, forcing up food prices and encouraging farmers to clear tropical forests in the quest for new land. Burning forests releases vast quantities of carbon dioxide and often cancels out many of the climate benefits sought from biofuels.

Biodiesel from North American soybeans has an indirect carbon footprint of 339.9 kilograms of CO<sub>2</sub> per gigajoule -- four times higher than standard diesel -- said the EU document. Biodiesel from European rapeseed has an indirect carbon footprint of 150.3 kg of CO<sub>2</sub> per gigajoule, while bioethanol from European sugar beet is calculated at 100.3 kg -- both much higher than conventional diesel or gasoline at around 85 kg.

By contrast, imports of bioethanol from Latin American sugar cane and palm oil from Southeast Asia get a relatively clean bill of health from the study at 82.3 kg and 73.6 kg respectively.

But one of the scientists involved with the study cautioned that much work remained to be done before the issue was properly understood, and that no firm conclusions could be drawn about the relative merits of different biofuel sources. "The major point is that we have to do more work, develop new sustainability criteria and we have to be very careful about the origins of biofuels," said Wolfgang Eichhammer of Fraunhofer. "We must also find a way of excluding the inefficient biofuels," he added.

The new analysis is contained in an annex that was controversially stripped from a report published in December. Editing the report caused one of the consultancies, Fraunhofer of Germany, to disown it partly in a disclaimer. But it has now been made public after Reuters used freedom of information laws to gain a copy. The EU's executive European Commission said it had not doctored the report to hide the evidence, but only to allow deeper analysis before publishing. "Given the divergence of views and the level of complexity of the issue ... it was considered better to leave the contentious analysis out of the report," the Commission said in a

statement. "The analysis prepared under this study applied a methodology which by many is not considered appropriate."

Eichhammer said he had made his stand with the disclaimer to protect the neutrality of science, and emphasized the value of ongoing Commission studies into the problem.

Pressure from the agri-business is mounting, FTD writes, as EU's bio-diesel production, mainly from rapeseed, is worth billions of Euros. If the commission's estimates are not "guided" in the right direction, they could "kill" this industry, warns a memo drafted by the executive's agriculture unit.

The clock is ticking, as member states should decide by June how they plan to reach a target - agreed in 2008 - to replace 10 percent of the traditional fossil fuels with renewable energy. Since electric cars are still in their infancy, biofuels would have been the easiest alternative.

In the UK, the government has decided to wait for the findings of several studies due to be released later this year before holding a formal consultation and then making their decision on whether to push ahead with biofuels.

Meanwhile, in France, another recently released study reinforced the ammunition of biofuel critics (see below). Commissioned by French energy and environment agency ADEME, the study suggests that biofuels may even have a worse emissions profile than traditional fossil fuels. Factors such as the clearing of forests to grow crops could cut the emissions benefits of both non-European biofuel production, and also output in Europe through the indirect effect of importing biofuel components, it notes.

"The significance of these effects ... warrants further work in order to establish how to take into account land use changes in the (emissions) balances of products made with agricultural raw materials," the French study said.

## **9. France Releases Final Biofuel Impact Report**

French energy agency ADEME has published a final report on the life cycle impacts of first generation biofuels intended to complement existing studies on the issue, particularly regarding direct and indirect land use change (LUC). A first study published by ADEME in October provided a positive assessment but it did not take into account direct and indirect LUC impacts, prompting strong criticism from environmental groups in France and forcing the government to demand further analysis.

The final report still puts emphasis on biofuels' environmental benefits without looking at LUC but it tempers its conclusions in a chapter on the issue. It also assesses three other categories of impacts: eutrophication, photo oxidation and toxicity.

The report shows that, when ignoring possible LUC impacts, emission and energy savings could be 90 and 80% respectively for biofuels from waste oils and animal fat, compared to fossil fuels. For fuel additive ETBE from wheat, maize and beetroot, savings are below 50 and 25% respectively.

It finds energy and emission savings of 49-85% and 47-77% respectively for ethanol from wheat, beetroot and sugar cane, ETBE from sugar cane as well as biodiesel from rapeseed oil, sunflower, palm oil and soy beans.

The most pessimistic scenario concerning direct LUC shows that emissions are significant and biofuels lose their advantage. For palm oil and sugar cane, other pessimistic scenarios find some benefits but these are significantly reduced.

Regarding indirect LUC, the most pessimistic scenario outlined in the final report (tropical forests cleared for biofuel production) shows that environmental benefits found without taking into account these impacts could be entirely cancelled out.

There are no clear conclusions concerning eutrophication, photo oxidation and toxicity. On eutrophication, the impacts seem to be the same as food crops. Bioethanol's potential toxicity appears greater than that of fossil fuels but it enjoys a slightly more positive photo oxidation indicator.

### **10. EBB Warns Of 'Widespread Biodiesel Trafficking'**

The seizure of a cargo carrying large quantities of biodiesel illegally imported in Venice last month is only the tip of the iceberg, European Biodiesel Board (EBB) said on Tuesday as an Italian judge confirmed that the fraudulent nature of the goods.

"The cargo is part of wider trans-shipment traffic aimed at evading existing EU anti-dumping and anti-subsidy measures on US biodiesel," said the trade association. The sector blames the US for the slow growth in European biodiesel production.

The seized goods had reportedly been exported from Canada but there is strong evidence they initially came from the US, claims EBB. Since 2006, the EU has seen a dramatic rise in blended biodiesel imports from the US. Anti-dumping measures were subsequently introduced to tackle the problem.

### **11. Norway Requires 3.5% Biofuel Content in Road Vehicles Fuels**

On April 1, Norway began requiring biofuels to make up 3.5 percent of fuel companies' annual sales for use in road vehicles, up from the previous 2.5 percent. The increase was required by a legal amendment, published on March 26<sup>th</sup>, to the Product Regulations Act (1976-06-11/79). The amendment took effect April 1 despite concerns expressed earlier by the Norwegian Petroleum Institute (NP), an organization representing oil producers and distributors.

The Environment Ministry said in a March 29<sup>th</sup> statement that the higher biofuel requirement is intended to reduce greenhouse gas emissions and will also protect jobs related to biofuel technologies. The requirement will increase to 5 percent when new sustainability requirements are introduced, possibly by January 1<sup>st</sup>, 2011, according to the statement.

In a response to an initial government plan to increase the requirement, NP stated on January 6<sup>th</sup> that industry would need 18 to 24 months to ensure that infrastructure was in place to supply biofuels at a level of 5 percent. However, an Environment Ministry official told reporters on April 4<sup>th</sup> that the government did not believe that any practical impediment existed to the initial increase.

According to the ministry, breaches of the new regulations could result in financial penalties under the Product Regulations Act.

The amendment, which was adopted by a legislative committee and did not require approval by the full Parliament, also requests that companies provide information on the raw material and the country of origin for biofuels put on the market in Norway. Only these documented biofuels will count towards companies' biofuels obligation. The information must be documented "as far as is practicable." Reporting may be carried out by individual companies or jointly.

Under a February 1<sup>st</sup> agreement between NP and the ministry, NP's member companies will supply more precise information on the biofuels they sell. The agreement is designed to provide motorists with better information on the environmental impact of purchased fuel.

## **12. EU Probes Alleged Breaches to Rules on Lorries**

The European Commission may take legal action against certain member states, pending an investigation into apparent cross-border "gigaliner" lorry activity between Germany and Denmark. The EU does not allow such activities without permission. Gigaliners are trucks that can be up to 18 meters in length and weigh up to 60 tons. They can only operate within national borders under existing EU law. The commission is considering proposals to allow cross-border activity.

An ongoing impact assessment will determine whether these vehicles are suitable for European road conditions. Stakeholders are split over whether to allow gigaliner trucks in Europe, and a German study has raised environmental concerns.

The results of the assessment are expected in the autumn. In the meantime, gigaliners have been piloted in Finland, Sweden, Denmark and Germany. The commission launched an investigation after concerns were raised by Green MEP Michael Cramer.

A spokesperson said that the commission is drafting a request to the EU's 27 member states to provide information concerning cases where the weight and dimension limits in directive 96/53/EC are exceeded, with particular reference to gigaliner trials.

## **13. Debate Underway Regarding Plans To Cut Van CO<sub>2</sub> Emissions**

The proposed long-term CO<sub>2</sub> emission-reduction target of 135 grams per kilometer by 2020 for vans is extremely ambitious and needs justification, an influential MEP told the parliament's environment committee. Martin Callanan, who is leading the parliament's debate on European Commission proposals to reduce van emissions, also told the committee the recommended €120 per gram fine for exceeding a 2016 target of 175g/km target was "extremely large".

Mr Callanan made a similar comment about penalties for carmakers during the parliament's debate on car CO<sub>2</sub> emissions in 2008. The British conservative MEP said the commission could not apply the same level of ambition to light commercial vehicles because it is a "very different" market.

German MEP Anja Weisgerber of centre-right EPP, the parliament's largest political group, said the proposals must take into account difficulties posed by the economic crisis.

However, Socialist, Liberal and Green MEPs argued for greater ambition in the proposed targets. Liberal MEP Chris Davies said the technology to limit emissions to 160g/km by 2016 was already "on the shelf". Some committee members suggested a speed limit for vans similar to that which exists for trucks.

Some member states also raised concerns about the proposals, stressing the particular characteristics of this sector. But a commission official taking part in the environment committee debate insisted the 135g/km target was feasible and said the compliance cost was similar to that for cars.

Several countries want to ditch the proposed 2014-16 phase-in for the 175 grams per kilometer target. Some, such as Sweden, want the 175g/km emission target to apply from 2014. Others, such as the UK, say 2016 would better fit with the industry's product development cycle. France and Germany said the phase-in should be extended to end in 2017.

Most countries, including the UK, France and Ireland, said they could support the proposed 135g/km target for 2020 if a European Commission impact assessment in 2013 confirmed its feasibility. The Dutch and Swedish support the target as it stands.

Italy reiterated its opposition to the 2020 target. Member states need more time because there is limited potential to cut emissions from vans, it said. There are also longer lead times than in the car sector. Germany also said it was not feasible. Poland agreed.

Several member states said the proposed penalties for manufacturers missing their emission targets were too high. Germany said €95 per gram instead of €120 per gram was reasonable. France said the penalties should be aligned with those for cars.

Some such as Ireland want heavier vans brought into the scope of the proposals. Others want minibuses to be included. Ireland said eco-innovation credits and "super-credits" for low emitters were "unnecessary" and "over-generous". Sweden supports them.

Kerstin Meyer of green transport group T&E said: "Business spends €30bn every year on fuel for vans. That's money going up in smoke that could be invested in training, technology and innovation. A 125g long-term target will bring down fuel bills and make Europe more competitive".

#### **14. Transport Must Cut Emissions by 50-80%, EU Told**

A project set up by the European Commission to explore emission-reduction scenarios for transport up to 2050 has found the sector needs to cut its emissions by 50-80% compared with 1990 levels to reduce the EU's total emissions by 80%. But the most ambitious scenario developed so far would only deliver a reduction of less than 60% by 2050, project organizers told stakeholders in Brussels as they presented their conclusions. This means transport is unlikely to deliver the required cuts.

The analysis is based on combinations of policy options and technological improvements including new vehicle emission limits, increased fuel taxes, support for electric and hydrogen technologies, EU motorway speed limits and land transport's inclusion in the EU's emissions trading scheme (ETS).

Deep emission cuts require technical, structural and demand-reduction measures, according to the project organizers. These would have to be put in place fairly rapidly to allow sufficient time to deliver emission reductions because most instruments have long lead times.

Further scenarios will be developed in the coming months to find a combination that delivers greater reductions. The organizers hope to have a final version of their scenario-generating tool ready by the end of April, by which time they will publish more a detailed explanation of the assumptions they have used.

The commission's s transport department is working on a transport white paper for the period 2010-20, which it says will be completed by November. An official present at the meeting said the project's findings will be used to inform the policy paper.

### **15. UK Greenhouse Gas Emissions Drop By 8.6%**

The recession and a switch from coal to nuclear power helped produce a dramatic drop in Britain's greenhouse gas emissions over the last year, new government figures show. Emissions of the main greenhouse gas, carbon dioxide, fell 9.8% in 2009, while overall output of a group of six greenhouse gases fell 8.6%.

According to the Department for Energy and Climate Change (DECC), the estimated decrease in CO<sub>2</sub>, from 533m tons in 2008 to 481m tons in 2009, was mainly caused by a significant fall in energy consumption as the economy contracted. A switch from coal to nuclear for electricity generation also helped, the department said.

DECC said the biggest falls in emissions in 2009 came from businesses and industrial processes, while a drop in domestic consumption of fossil fuels for space heating – because last year was slightly warmer than 2008 – led to a drop in domestic emissions of 5%.

Public sector emissions fell by just 0.1%, while transport emissions, not including international flights and shipping, fell 7% because of lower fuel consumption in the face of the recession and greater use of biofuels, DECC said.

The UK is on track to exceed its Kyoto protocol target for the period 2008-2012, which is a 12.5% cut in greenhouse gas emissions below 1990 levels. But environmental campaigners point out this has been achieved in part by the increasing use of gas to generate electricity and the export of manufacturing to other countries, rather than specific emissions reduction policies.

### **16. Commission 'In Breach of Duty', Says Ombudsman**

The European ombudsman has condemned the European Commission for failing to comply with a ruling that it should publish correspondence with the German carmaker Porsche. Nikiforos Diamandouros, the EU's ombudsman, is so exasperated with a lack of co-operation from the Commission that for the first time he has asked the European Parliament to intervene on his behalf.

In a report published on 4 March, the ombudsman said that the Commission had ignored his October 2008 recommendation that its officials should grant access to the documents to Friends of the Earth Europe, an environmental campaign group. Friends of the Earth had filed an official access-to-documents request in March 2007, about letters and meetings that car manufacturers had with Günter Verheugen, then the European commissioner for enterprise, about reducing their carbon dioxide emissions.



While the Commission did offer some information, it refused to release three letters sent by Porsche to Verheugen. The Commission argued that releasing the letters would “undermine” the protection of Porsche's commercial interests.

Diamandouros accused the Commission of a “breach of duty” under EU law and “maladministration” in the case. He said he had offered EU officials every chance to fix the impasse over the last two years. He concluded that the Commission risked “eroding citizens' trust in the Commission and undermining the capacity of the European ombudsman”. Diamandouros described the Commission's attitude as “detrimental not only to inter-institutional dialogue, but also to the public image of the EU”.

The case has become a test of the extent to which the work of the ombudsman's office is respected by EU institutions. His report will add to tensions between the Commission and the Parliament, which recently resolved to draft a new inter-institutional co-operation pact.

Friends of the Earth filed a complaint with the ombudsman in late 2007. His staff then inspected the documents at the Commission's offices in September 2008 and concluded shortly after, in a draft report, that the Commission “had wrongly refused access” to the letters, adding that they should be released in their entirety, or at least the bits that were not commercially sensitive, by January 2009. The Commission, however, requested six extensions, arguing that it needed more time to consult Porsche over whether they would agree to release the letters. In September 2009, the Commission sent a reply that it would grant Friends of the Earth only partial access to the three letters.

“We don't know what is in these letters. It starts speculation as to whether either Verheugen or the Commission wants to hide something,” said Paul de Clerck, from Friends of the Earth Europe. “We were partially dependent on the company involved and we had to respect their part of the bargain as well,” said Commission spokesman Michael Mann. “We have nothing to hide.”

The ombudsman said in his report that he still had not received information from the Commission as to whether it has officially notified Porsche of its decision to release edited versions of the letter. Mann said Commission officials had notified Porsche in the last few days of their intention to release edited copies of the letters.

The ombudsman's report has been sent to the European Parliament's petitions committee which is expected to study it over the next weeks.

## **17. UNECE Adopts Type Approval Safety Requirements for Electric and Hybrid Vehicles'**

The World Forum for Harmonization of Vehicle Regulations, adopted at its March 2010 session, a new version of UNECE Regulation No. 100 which introduces type approval requirements for all types of electric and hybrid vehicles' electric safety requirements .



Type approval refers to the administrative procedure by which the competent authorities in one Contracting Party declare, after carrying out the required verifications and tests, that a vehicle submitted by the manufacturer conforms to the requirements of the given Regulation. Once this approval has been obtained, the vehicle will benefit from the mutual recognition of this approval in all Contracting Parties applying UNECE Regulation No. 100 (currently 41 countries).

The new version of UNECE Regulation No. 100 will cover all types of electric vehicles: pure electric, hybrid, plug-in, as well as hydrogen fuel cells vehicles as regards electric safety requirements. The Regulation encompasses the electric safety requirements of all types of road vehicles (passenger and commercial vehicles) which can exceed 25 km/h. One of the key requirements is that vehicles must provide users with an effective protection against electric shocks.

This change in UNECE Regulation No. 100 reflects the growing interest of both

manufacturers and customers for electric and hybrid vehicles. It offers car manufacturers the legal instrument to put into the market passenger and commercial vehicles with greener standards, reducing the costs and delays associated with multiple approvals in various countries.

### **18. European Union Climate Funding Threatened**

The European Union's development chief may be forced to name and shame France, Germany and Italy for not living up to their aid commitments, contributing to a roughly \$17 billion funding gap this year. Andris Piebalgs warned in January he would clearly identify EU countries that failed to meet their aid commitments. "In 2010, the EU aid disbursements are likely to further grow to approximately 54-55 billion Euros (\$74-75 billion)," a leaked EU document seen by the press shows. "Many member states will most probably not reach their... aid targets. A gap of 12-13 billion Euros remains."

The paper did not name France, Germany or Italy, but an earlier OECD report said they were among the EU's worst performers. The paper also warned the shortfall threatens the EU's standing in climate talks, which aim to build on the weak accord reached in Copenhagen in December.

"There is a risk of conflict with new financial commitments the EU has taken in the framework of the Copenhagen accord," warns the paper. The EU has pledged to urgently channel 7.3 billion Euros in "climate aid" to poor countries over three years to help them cut emissions from industry and tackle climate impacts on crops. That would plug a gap until a global climate deal is struck for the years after 2013.

The paper on overseas aid praises five countries -- Belgium, Luxembourg, Sweden, Denmark and the Netherlands -- for overachieving, while Britain and Spain are named as key players to help make up the shortfall. Anti-poverty group Oxfam said the EU needed a radical new plan that made aid pledges legally binding and set timetables.

### **19. Italian Environmental Assessment Paints 'Bleak' Picture**

On April 15<sup>th</sup>, the technical wing of Italy's Ministry of Environment released its annual assessment of the nation's environmental health, painting what the organization said was the bleakest picture ever, with biodiversity disappearing, air and water quality deteriorating, temperatures on the rise, and a surge in natural disasters and extreme weather events. The Institute for Environmental Protection and Research, known by its Italian acronym ISPRA, said in its report, *Annuario dei Dati Ambientali 2009*, that the most serious environmental issue facing Italy is extreme weather and natural disasters at least partially connected to rising temperatures.

In the 498-page report, ISPRA said landslides, floods, and severe storms had doubled in frequency in Italy in the past 40 years, while also increasing in intensity and duration. It said evidence ties the changes in the patterns for those events to rising temperatures that affect weather, glacial melting, and the behavior of rivers, lakes, and the sea.

It reported that the number of days in which air quality was considered unhealthy in one of Italy's 30 largest cities increased to 417 days in 2009, from 279 in 2008 and 249 in 2007. Water quality was also worsening, though less dramatically as policies to restrict high-risk ocean shipping and factory runoff put in place in 2004-2006 were starting to make an impact. The report said water quality levels were still weaker than in Europe as a whole.

The report also said biodiversity was suffering in Italy, with some 33 species of birds and plants on the brink of extinction and at least three already gone since 2005. All told, the report said, 23 percent of all bird species in Italy, 15 percent of all mammal species, and 40 percent of all plant species faced at least moderate risk. The report said the biggest factors threatening biodiversity are urban sprawl, weak protection of environmentally sensitive areas, changes in land use, and the overexploitation of natural resources.

The report was not without good news, however. The amount of wooded areas and of urban green areas was on the rise. In addition, while greenhouse gas emissions exceeded the levels required by the first compliance period of the Kyoto Protocol, they have dropped in each of the past two years. Greenhouse gas emissions at the end of 2009 were about 8.1 percent above 1990 levels; the protocol requires an average 6.5 percent reduction from 1990 levels during the 2008–2012 commitment period.

ISPRA based its statistics on data collected from satellites and some 200 field offices around Italy and off the Italian coast.

## **20. Parliament: Britain Must Address Costs, Health Effects of Poor Air Quality**

The United Kingdom must address the long-term consequences of poor air quality, including premature deaths, damage to ecosystems, and potential fines for breaches of EU regulations on air pollution, a House of Commons committee said in a March 22 report. "The U.K. should be ashamed of its poor air quality and the harm this causes," said the Environmental Audit Committee, which considers the impact of government policies on environmental protection. In addition to the costs of treating health problems caused by pollution and of improving the degradation to the natural environment, the United Kingdom faces "significant" fines for "likely" breach of the European Union's Ambient Air Quality Directive (2008/50/EC), the committee said.

It recommended that the government ramp up its research on the economic consequences of poor air quality, which "probably causes more mortality and morbidity than passive smoking, road traffic accidents or obesity." In the transportation sector, the government needs to explain the role played by brake, tire, and road wear in generating particulate matter and to research the impact of road surface particulate matter on air quality, the committee said. It called for more local government participation in developing a national plan for low-emissions zones in major cities.

The government also should raise the profile of improving air quality across all departments, as currently only the Department of the Environment, Food, and Rural Affairs and the Department of Transport are "formally" accountable for policies that harm air quality, the committee said.

## **21. UK Blamed For Pollution in Dutch Rural Areas**

Three large British power plants contribute more to nitrogen and acid deposition and particulate matter (PM<sub>2.5</sub>) levels in most rural areas of the Netherlands than eleven large Dutch power plants combined, according to the findings of a new study.

The Drax power plant in Selby poses a particular problem. Although its individual contribution to pollution in the Netherlands appears small, it is significantly higher than that of Dutch power plants. The Kingsnorth plant in Kent is also a concern because it is much closer to the Netherlands. And its SO<sub>x</sub> emissions exceed those of Drax.

The other installation monitored by Dutch consultancy TNO is the Aberthaw power plant near Cardiff in Wales. Its contribution to PM<sub>2.5</sub> concentration levels in the Netherlands is smaller than for Drax, except for sulfate. Applying best available techniques (BAT) to these plants would help reduce Dutch pollution, says TNO.

The Netherlands Society for Nature and Environment, which commissioned the TNO study and the European Environmental Bureau (EEB) are calling on MEPs voting on a revised Integrated Pollution Prevention and Control (IPPC) directive at the end of April to restrict proposed derogations from BAT as far as possible.

In a related development, the European Court of Justice (ECJ) has condemned the UK for failing to apply EU emission limits for large combustion plants (LCPs) to a coal-fired power plant in northeast England. The plant supplies power to a major aluminum smelting works. Britain said the Lynemouth plant fell outside the scope of the 2001 LCP directive because it was singularly employed in supplying energy to aluminum smelting, and was therefore a vital part of the manufacturing process rather than the energy sector.

The UK had also contended that the plant, which had previously been regulated under the directive and then withdrawn, only produced energy indirectly by combustion, and was therefore exempt, a claim that was rejected as "too broad" by the court. Installations with a thermal input of 50 megawatts or more can be exempted if they "make direct use of the products of combustion in manufacturing processes". A court opinion issued in December had advised EU judges to condemn the member state.

## **22. Norway Proposes Gasoline Vapor Conversion Rules**

Norway's Climate and Pollution Agency (KLIF) has submitted a legal proposal to the government that would require gas stations with an annual turnover of more than 3,000 cubic meters (792,500 gallons) of gasoline to install a new generation of vapor recovery and conversion equipment by 2018. New stations would be required to install so-called Stage II vapor recovery technology during construction, while older stations would have to ensure that existing technology conforms to new conversion standards. According to an April 21<sup>st</sup> KLIF statement, the measure would reduce emissions of gas vapors, which contain volatile organic compounds, by at least 85 percent. Investment costs for Norway's 1,200 affected stations would be offset by savings from the resale of converted vapor, KLIF said. The proposal would implement EU Directive 2009/126, which deals with petrol vapor recovery, through amendments to Norway's Law on the Reduction of Gasoline Vapor Emissions in Storage and Distribution (1999/206). Norway, which is not formally part of the European Union, implements EU legislation through its membership in the European Economic Area. A draft proposal was sent to the Environment Ministry on April 19<sup>th</sup>, with a recommendation that a hearing be scheduled.

## **23. Heavy Metal Emissions for Danish Road Transport Quantified**

A new report<sup>1</sup> presents new heavy metal emission factors for cars, vans, trucks, buses, mopeds and motorcycles, for each of the emission sources fuel consumption, engine oil, tire wear, brake wear and road abrasion. The emission components covered are Arsenic (As), Cadmium (Cd), Chromium (Cr), Copper (Cu), Mercury (Hg), Nickel (Ni), Lead (Pb), Selenium (Se) and Zinc (Zn), all of them relevant for emission reporting to the UNECE CLRTAP (United Nations Economic Commission for Europe Convention on Long Range Transboundary Pollutants) convention. The report also presents a new Danish inventory for the year 2007.

### **A. Method**

The heavy metal contents in fuel and engine oil used in the present study are based on measurement data from the European research organization CONCAWE for fuel and information from key experts for engine oil. The fuel consumption per km comes from the existing Danish emission inventory, and functions for engine oil consumption are established based on key expert information. The product of fuel/engine oil consumption per km and the associated heavy metal content values make up the heavy metal emission factors. For each vehicle category total emissions are calculated as the product of emission factors and total mileage.

For tire wear the present survey mainly uses information of wear rates per vehicle type provided by the Danish Tire Trade Environmental Foundation. This information has been combined with literature values for airborne fractions of worn particulate matter and heavy metal content in tire

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<sup>1</sup> Winther, M. & Slentø, E. 2010: Heavy Metal Emissions for Danish Road Transport. National Environmental Research Institute, Aarhus University, Denmark. 99 pp. – NERI Technical Report no. 780.

material in order to estimate kilometer related emission factors for heavy metals. For each vehicle category total emissions are calculated as the product of emission factors and total mileage.

For brake wear and road abrasion per vehicle type the kilometer based emission factors for airborne particulate matter come from the existing Danish non exhaust emission inventory. The product of these emission factors and literature values for heavy metal content in brake lining/road asphalt material make up the kilometer related emission factors for heavy metals. For each vehicle category total emissions are calculated as the product of emission factors and total mileage.

## B. Results

For the list of heavy metal components, the following emissions in total TSP (in brackets) are calculated for the year 2007: As (8 kg), Cd (48 kg), Cr (197 kg), Cu (51 779 kg), Hg (28 kg), Ni (158 kg), Pb (6 989 kg), Se (33 kg) and Zn (28 556 kg).

The specific vehicle category activity/emission source category combinations and the related emission factors determine the total emissions for each vehicle type/emission source.

*Table ES1*

*Total heavy metal emissions (kg) per vehicle type for Denmark in 2007 calculated in the present study.*

<b>Vehicle Emission component</b>	<b>Cars</b>	<b>Vans</b>	<b>Trucks Gasoline</b>	<b>Trucks 3.5-7.5 t.</b>	<b>Trucks 7.5-16 t.</b>	<b>Trucks 16-32 t.</b>
As	3.845	2.018	0.005	0.146	0.098	0.637
Cd	28.753	9.946	0.018	0.589	0.390	2.764
Cr	109.389	37.879	0.131	3.472	2.378	16.271
Cu	31 259.785	18 321.180	3.045	104.072	67.594	412.694
Hg	17.003	4.936	0.016	0.149	0.169	1.742
Ni	79.464	34.839	0.084	2.729	1.853	12.681
Pb	4 301.144	2 462.325	0.315	9.085	6.152	41.757
Se	14.755	7.929	0.014	0.469	0.369	2.937
Zn	14 347.945	6 807.679	8.479	350.512	273.864	2 224.187
<i>Continued</i>						
<b>Vehicle Emission component</b>	<b>Trucks &gt;32t.</b>	<b>Urban buses</b>	<b>Coaches</b>	<b>Mopeds</b>	<b>Motorcycles</b>	<b>Total</b>
As	0.700	0.335	0.175	0.019	0.060	8.038
Cd	2.973	1.163	0.730	0.024	0.281	47.629
Cr	18.270	5.026	2.895	0.223	1.242	197.177
Cu	436.501	402.757	207.143	154.802	409.404	51 778.976
Hg	2.480	0.793	0.456	0.038	0.250	28.030
Ni	13.902	7.290	4.019	0.274	1.171	158.306
Pb	45.691	29.336	15.891	20.744	56.640	6 989.079
Se	3.500	1.352	0.739	0.098	0.408	32.570
Zn	2 632.965	1 021.562	582.966	57.048	248.947	28 556.153

Per vehicle type cars are the most important source of emission for all heavy metal species, followed by vans, trucks, buses and 2-wheelers. However, the car emissions shares that range

between 62 % (Pb) and 46 % (Se) are somewhat smaller than the share of total mileage. Trucks and buses use more fuel and engine oil pr kilometer driven, and have higher emission factors for brake, tire and road wear, with Pb and Cu as an exception for brake wear.

*Table ES2*

*Total heavy metal emissions (kg) pr source category for Denmark in 2007 calculated in the present study.*

<b>Emission component</b>	<b>Fuel</b>	<b>Engine oil</b>	<b>Tire wear</b>	<b>Brake wear</b>	<b>Road abrasion</b>	<b>Total</b>
As	0.8	-	0.8	6.5	-	8.0
Cd	0.5	39.4	2.5	5.2	0.1	47.6
Cr	31.6	65.0	3.4	74.5	22.7	197.2
Cu	21.7	106.5	14.8	51 624.6	11.4	51 779.0
Hg	28.0	-	-	-	0.1	28.0
Ni	4.5	39.4	24.2	72.1	18.2	158.3
Pb	3.3	173.5	76.3	6 682.2	53.8	6 989.1
Se	0.6	-	18.9	13.0	-	32.6
Zn	101.0	7 876.2	9 491.7	11 000.9	86.5	28 556.2

Almost all Hg emissions (100 % as a rounded share) come from **fuel usage** and for Cr and As the emission shares are 16 and 9 %, respectively. For fuel all other emission shares are insignificant (between 0 % and 3 %).

For **engine oil** the largest emission shares are noted for Cd (83 %) and engine oil also has substantial emission shares of Cr (33 %), Zn (28 %) and Ni (25 %).

For **tire wear** the most important emissions are Se (58 %), Zn (33 %) and Ni (15 %).

**Brake wear** is the most important source of emissions for Cu (100 %), Pb (96 %), As (82 %), Ni (46 %), Zn (39 %) and Cr (37 %). For Se the brake wear emission share is 40 %.

For **road abrasion** the most important emission species are Cr (12 %) and Ni (11 %). The road abrasion emission shares of other emission components are between 0 % and 1 %.

### C. Conclusions

Set in relation to a revised Danish emission budget, road transport (emission shares in brackets) is a key source for Cu (95 %), Zn (54 %) and Pb (53 %) and of some relevance for Cr (15 %). For the remaining emission components, road transport is only a small source of emission.

The road transport emissions of Cu and Pb almost solely originate from brake wear, also being the most dominating source for Cr. For Zn, brake and tire wear are almost equally important sources. Consequently, brake wear, and secondly tire wear, are the most relevant road transport sources to address, in order to reduce the Danish grand totals.

Important outcomes of the present project are the proposed heavy metal emission factors and calculated 2007 emission estimates pr fuel type and vehicle type, for each of the five emission sources; fuel and engine oil consumption, vehicle tire and brake wear and road abrasion. The gathered information of heavy metal content pr unit of consumption/emission has been essential for the establishment of emission factors for each of the five sources of emissions.

For the exhaust based emissions related to fuel and engine oil consumption it is a big improvement to have two separate sets of emission factors based on new information of heavy metal content. Until now, bulk emission factors related to the total fuel consumption have been used. By treating the sources separately updates of emission factors and calculated totals become easier, if new emission knowledge become available.

As regards the wear related emissions, the wear rate and airborne fraction of the worn material, and the associated heavy metal content determine the resulting heavy metal emission factors. For tire wear, the new factors for raw particulate emissions are regarded as being more precise than the ones used in the previous Danish non-exhaust emission inventory, since weight, wear percentage and tire life times are provided by Danish experts in the tire business.

The wear rates and airborne fractions of worn material for brakes, especially for heavy duty vehicles and for road abrasion in general, are regarded as uncertain. However, the outcome of the literature study did not bring any new information, which justifies any update of the particulate emission factors from the existing Danish inventory. These latter factors and the associated heavy metal content of worn material determine the heavy metal emission factors proposed in the present report.

Most importantly for the Cu and Pb metal content of brake material used by trucks and buses, there is a big difference between the figures used in the present study and averages based on other literature values. The metal content values used in this report for trucks and buses are very low, and rely on scarce data. The data differences point out the need for data updates, when new information becomes available.

By using the detailed emission factors and inventory calculation methods established in the present project, estimates of heavy metal emissions can be made for other years than 2007. The emission factors are independent from inventory year and the emissions for each source/fuel/-vehicle type combination are calculated as the product of the specific emission factor and the relevant inventory year specific activity data; fuel or engine oil consumption or total mileage.

#### **24. French Tax Incentives Produce 'Spectacular' Cuts in New Vehicles' Emissions**

On April 1<sup>st</sup>, France's top environment official said that, thanks to innovative tax policies, the country has made "spectacular" progress reducing new vehicles' carbon dioxide emissions and now sells Europe's cleanest-running cars. Jean-Louis Borloo, minister of ecology, sustainable development, energy, and the sea, made the comments a week after the government dropped efforts to adopt a carbon tax, to the dismay of environmental organizations. According to new data that the ministry attributed to the French Committee of Automobile Manufacturers, average carbon dioxide emissions for new vehicles sold in France declined by 16 grams per kilometer between the end of 2007 and the end of 2009. Average emissions declined from 148 grams of carbon dioxide per kilometer in 2007 to 139 grams in 2008 before falling to 132.8 grams in 2009. Borloo called the improvement "spectacular."

Emissions from vehicles purchased in France are now 12.7 grams under the European average, putting France atop European rankings for the first time, the ministry said.

Borloo said the data confirm the effectiveness of the country's environmental tax policy known as the "bonus-malus" program, which pays a bonus for purchases of clean-running vehicles and slaps a tax on high-emitting cars.



President Nicolas Sarkozy recently decided to drop efforts to impose an economy-wide carbon tax, a chief component of the wide-ranging Grenelle environmental plan he promoted in his 2007 campaign, in the face of resistance from business and his party's poor showing in regional elections. Polls had indicated a majority of the French opposed the carbon tax. Borloo strongly championed the tax, which he said was misrepresented to the public by special interests.

Sarkozy said France will pursue an EU-wide carbon tax instead, but critics said the EU's 27 members are highly unlikely to agree on such a measure.

Parliament passed the landmark Grenelle 1 law in a near-unanimous vote in August 2009. However, the second installment of the program has stalled in the National Assembly after difficult passage in the Senate.

Borloo said the bonus-malus program, Grenelle's biggest success, has helped to support French industry during the severe slump in the global auto industry, while "at the same time it was a major ecological success at reducing emissions." "This success shows once again that France is leading the way in sustainable development," he said. "Bonus-malus has proved its effectiveness, both ecologically and economically. It shows the advantages of the incentivizing environmental taxation that we have been putting in place for more than two years," the minister said.

## **25. France Delays Kilometer Tax on Trucks in Another Eco-Tax Retreat**

On April 19<sup>th</sup>, the French government 19 delayed implementation of a kilometer-based tax on heavy trucks, the second time in a month it has retreated on a major tax component of its ambitious environmental framework program known as Grenelle. Jean-Louis Borloo, minister of ecology, energy, sustainable development, and the sea, said in a statement that, due to technical and other reasons, the truck tax will take effect nationally in 2012 instead of 2011 as previously announced. Borloo said choosing a company to operate the program would take the rest of 2010. Installing global positioning devices on trucks, building toll booths, and testing the system would take all of 2011, the ministry said.

The delay was the second for the tax, originally planned for 2010, and the second time in a month that the government backtracked on a major green tax.

In March, President Nicolas Sarkozy announced the withdrawal of a 17 euro (\$22.92) per metric ton carbon tax that was central to his Grenelle environmental plan. It was aimed at changing the energy consumption habits of consumers and businesses by taxing carbon dioxide emissions. Major environmental groups have said the government is abandoning its environmental plans for political reasons, an accusation the government denies.

Both the carbon tax and truck tax had been passed by Parliament and seemed ready to go.

Included in France's 2009 budget law, the kilometer tax will apply to trucks exceeding 3.5 metric tons using national and local roads, excluding toll roads run by concessions, as a means to reduce greenhouse gas emissions from transportation.

The measure, part of France's Grenelle environment framework program, is also aimed at transposing the EU Eurovignette directive. It stipulates that revenue generated from national

roads will go to finance development of rail and waterway transport, as well as public transportation. Revenue from local roads will go directly to local governments.

Borloo said in his statement that the question of how to divvy up proceeds from the tax among governments also has proved to be thorny.

Borloo said the system will be tested in 2011 in Alsace—which has had a large increase in truck traffic since Germany implemented its own truck tax recently—before taking effect nationwide in 2012.

## **26. More EU Countries Adding CO2-Based Car Taxation**

Seventeen of the EU's 27 member states currently apply CO2-based car taxation, according to the latest annual car tax guide published by European carmakers' association ACEA. The number of countries basing car taxation either wholly or partially on a vehicle's CO2 emissions is steadily increasing, nearly doubling from just nine in 2006. Germany and Latvia are the latest two to join the group since last year.

Fifteen countries also offer cash incentives for buying electric vehicles. Italy did not renew its fleet renewal scheme last year, which included incentives for greener cars but Belgium is new to the list of EU countries providing electric car incentives. These mainly take the form of tax reductions and exemptions applied to car registration taxes, car circulation taxes, or both. France and Spain are particularly active in this area.

Electric cars are going to make an important contribution to reducing road transport emissions but conventional engines will play a predominant role for years to come and must be included in governments' sustainable mobility plans, says ACEA.

The latest countries to apply carbon taxes to passenger cars are Latvia, which levies a variable registration tax based on a vehicle's carbon dioxide emissions, and Germany, which since July 2009 has modified its annual circulation charge so that high-emission vehicles pay more, while low-emission cars benefit from an exemption.

The only EU countries not levying a carbon tax on cars are Bulgaria, the Czech Republic, Estonia, Greece, Hungary, Italy, Lithuania, Luxembourg, Poland, and Slovenia.

The Manufacturers' Association said it backs "further introduction of fiscal incentives for fuel efficiency" as a way to influence consumer demand. But it said that EU vehicle taxes should be harmonized to "support manufacturers and maintain the integrity of the [European] single market."

## **27. France to Build Charging Networks for Electric Cars**

The French government has announced an agreement with 12 collectivités territoriales (local authorities) and carmakers Renault and PSA to develop charging infrastructures for electric and hybrid vehicles. The agreement is part of an action plan on electric vehicles announced in October. A group of 20 companies including Air France, AREVA and Veolia also committed to buy 50,000 vehicles. The government hopes a total of 100,000 vehicles will be purchased by 2015 to encourage market penetration.

Other EU countries are also very active in this area. Spanish Prime Minister José Luis Rodríguez Zapatero recently announced his government will invest €590m in the production of electric cars over the next two years. Spain plans to have 250,000 electric vehicles in circulation by 2014.

The Spanish presidency of the EU is also pushing for a European plan on electric cars. The European Commission is working on a wider strategy to support clean and energy efficient vehicles. Its strategy, due to be published on soon, will set out an action plan for decarbonizing the transport sector.

### **28. Three Carmakers Team Up On Low-Carbon Vehicles**

Carmakers Daimler, Renault and Nissan have announced a joint initiative to speed up the development of low-carbon and electric vehicles. The firms have agreed to swap technologies and share development costs to gain a foothold in the green car market. The initiative will focus on the manufacture of two brands, the next generation Smart cars and Renault Twingo. There are also plans to modify Nissan-Renault engines for use in Mercedes Benz vehicles to make them more efficient.

The three manufacturers will also cooperate on technological developments for new light commercial vehicles. The European Commission is preparing an EU strategy on clean and efficient vehicles to coordinate national and corporate initiatives in this area.

### **29. EU Approves State Aid for Eco-Innovation Projects**

The European Commission has authorized France to grant state loans of €35.14m to two French companies developing lightweight materials to cut aircraft fuel consumption. The subsidies will not give the firms a significant advantage, it says.

Daher-Socata will receive €12.34m for developing lighter main landing gear doors for the future Airbus A350 XWB. EADS-Sogerma will get €22.8m to develop main landing gear bays for the plane. Both will use composite material to make the equipment lighter.

The commission says it found that the financial sector was reluctant to provide sufficient risk-sharing capital because of the long-term nature of the R&D projects. Each firm will receive a little under half the amount needed for total development costs.

### **30. Czech Minister Wants Firms in Polluted Region to Lower Emissions**

New Czech Environment Minister Rut Bizkova wants companies in the pollution-ridden Moravia-Silesia Region to lower emissions through higher investment in modern technologies. Bizkova said this was one of her priorities in her new post. She pointed out that she has chosen such priorities that she may fulfill with respect to her limited mandate.

The caretaker cabinet of Jan Fischer, to which Bizkova was nominated by the Civic Democrats (ODS), is to be replaced by a new government formed after the elections due on May 28-29.

Bizkova said she wants to offer money from the EU funds to the companies in the Moravian-Silesian region. She said Czech towns with a heavily polluted air may receive money to lower emissions produced by the public transport vehicles they use.

Bizkova also offered support to individual producers of emissions and help them find the best ways of gaining subsidies within environmental programs.

She said she would also speed up the process of drawing EU money and discuss the issue with the Financial Ministry.

Bizkova would like to make it possible for municipalities to apply for money earmarked for house insulation. In the second part of the year, Czech municipalities might get up to four billion crowns for insulation of schools and old people's homes, under the plan. Until now, the state has subsidized new insulation only for family houses and houses owned by associations of their inhabitants.

Bizkova noted that those who sold their carbon credits would have to approve the change, however. The Environment Ministry gained more than 17 billion crowns from these companies for the program.

Despite her limited mandate, Bizkova will probably make a decision on a major dispute concerning the upgrading of the coal-burning power plant in Prunerov, north Bohemia that is a part of the CEZ power company. The critics of the CEZ project for Prunerov's upgrading recall that Bizkova was CEZ spokeswoman for coal-burning power plants in the 1990s.

Jan Dusik (nominated by the Greens) resigned from the post of environment minister over the Prunerov issue a month ago. He said he was leaving the government because he was not given enough time to make a decision on the assessment of the environmental impact of upgrading Prunerov. The Greens then ceased to support the government due to it.

### **31. Petrom Advances Petrobrazi Refinery Upgrade**

Petrom SA, OMV AG's Romanian subsidiary, has let key contracts in its delayed modernization of the 4.5-million ton/year Petrobrazi refinery in Ploesti. Foster Wheeler AG will provide front-end engineering and design (FEED) modification services and engineering, procurement, and construction management (EPCM) for the revamp of an atmospheric/vacuum distillation unit. Foster Wheeler also received an EPCM contract for a new amine unit and a FEED contract for revamp of a delayed coking unit.

The company plans this year to increase Petrobrazi capacity to 6 million tpy, expand the refinery's coker, add a hydrocracker, and increase integration with the nearby Arpechim refinery.

Petrom said it is proceeding with the Petrobrazi upgrade after modernizing the Arpechim refinery, which has nameplate capacity of 3.5 million tpy but is operating this year only as needed.

## **NORTH AMERICA**

### **32. Port Of New York/New Jersey Launches Clean Truck Program**

The Port Authority and the U.S. Environmental Protection Agency have launched an aggressive program to replace up to 636 of the oldest, most polluting trucks serving the Port of New York and New Jersey with newer models that generate less pollution and greenhouse gas emissions.

Pre-applications for grants and financial assistance to cover the cost of a new truck are already available at the Truck Replacement Center. The center will provide truck drivers with information about the program and about the application process.

The \$28 million program is designed to encourage the owners of up to 636 pre-1994 drayage trucks that regularly serve the port to purchase newer vehicles. Truckers are eligible if they regularly call on the Port Authority's marine terminals. The program is partly funded by a \$7 million EPA grant, with the remainder coming from Port Authority funds.

The bi-state agency also announced a truck phase-out plan in which pre-1994 model trucks would no longer be able to call on Port Authority marine terminals beginning January 1, 2011. Trucks not equipped with engines that meet or exceed 2007 federal emissions standards will no longer be able to call on the Port Authority marine terminals beginning on January 1, 2017.

These initiatives were the result of months of discussions undertaken by members of the Port Authority's Truck Working Group, a broad coalition comprising members of state and private sector environmental organizations, trucking groups, labor and the maritime industry.

Under the program, trucks drivers will be eligible for the following assistance:

- A 25 percent grant toward the total purchase price of a replacement truck – averaging between \$20,000 and \$60,000 – which must be model year 2004 to 2008, equipped with an engine model year 2004 to 2007.
- Low-interest financing (5.25 percent over five years) for up to 75 percent of the total purchase price of a replacement truck

The Truck Replacement Program is part of the Clean Air Strategy for the Port of New York and New Jersey developed by the Port Authority in partnership with a broad group of port industry leaders, federal and state regulatory agencies, city officials and environmental groups to develop strategies to reduce emissions from all port related sources and improve air quality in the region.

Through the use of the federal grant funds, the program will pay for 25 percent of the cost of the purchase of a newer model truck. The remainder of the funds will be used to provide low-interest loans.

Tetra Tech will manage the overall program, including outreach, monitoring and reporting services. ACCION USA Inc., a leading nonprofit organization that provides assistance to credit-challenged small businesses, will administer the program funds.

In addition to the Clean Truck Program, the Port Authority has begun three other initiatives of the Clean Air Strategy. The Ocean-Going Vessels Low Sulfur Fuel Program will encourage the use of low-sulfur fuel by providing financial incentives to operators of ocean vessels for up to 50 percent of the cost differential between high-sulfur fuel and low-sulfur fuel. The Locomotive Retrofit Program will combine Port Authority and CSX and Norfolk Southern rail funds with federal grant funding to retrofit two switcher locomotives serving the port with ultra low-emitting GenSet technology. And the Cargo Handling Equipment Fleet Modernization Program will reimburse participating port tenants for 20 percent of the cost of replacing existing cargo handling equipment with new equipment that meets federal on-road air-emission standards as applicable, or the most recent federal off-road emissions standards.

The program adopted by the Port of New York/New Jersey follows the lead of similar programs adopted by the port of Los Angeles/Long Beach and several other West Coast ports. Some of the West Coast port programs, including the Port of Long Beach program, are subject to court challenges filed by various stakeholders, with the focus shifting from environmental to labor issues, as pro-union groups attempt to use the clean truck port programs to organize independent truckers. The Long Beach program, supported by the Teamsters union, included provisions that blocked independent truck operators and small trucking companies from serving the port--regardless of the age or emission levels of their trucks--which triggered a legal challenge by the American Trucking Association (ATA).

### **33. IMO Adopts North American Proposal for Emission Control Area**

The International Maritime Organization (IMO) has officially accepted the proposal to designate waters off the North American coasts as an Emission Control Area (ECA) – a move that will result in cleaner air for millions of Americans. Large ships that operate in ECAs must use dramatically cleaner fuel and technology, leading to major air quality and public health benefits that extend hundreds of miles inland. The ECA was proposed in March 2009 and the IMO adopted it in the fastest possible timetable.

The large commercial ships that visit the nation's ports, such as oil tankers, cruise ships and container ships, currently use fuel with very high sulfur content which, when burned, emits harmful levels of particulate matter and nitrogen oxide that can travel hundreds of miles inland, causing severe respiratory symptoms in children and adults. These ships, most flying the flags of other countries, make more than 57,000 calls at more than 100 U.S. ports annually. More than 30 of these ports are in metropolitan areas that fail to meet federal air quality standards. In total, nearly 127 million people currently live in areas that fail to meet U.S. air quality standards.

Enforcing the stringent ECA standards will reduce sulfur content in fuel by 98 percent - slashing particulate matter emissions by 85 percent, and nitrogen oxide (NOx) emissions by 80 percent. To achieve these reductions, tougher sulfur standards will phase in starting in 2012, ultimately reaching no more than 1,000 parts per million by 2015. Also, new ships must use advanced emission control technologies beginning in 2016 which will help reduce NOx emissions.

As a result of the cleaner air, nearly five million people will experience relief from acute respiratory symptoms in 2020 and as many as 14,000 lives will be saved each year.

Canada and France join the U.S. in this North American ECA, implementing a coordinated geographic emissions control program. In developing the U.S. proposal, EPA joined with federal partners at the Departments of Homeland Security, Defense, State, Transportation, and Commerce, among others. This is the first ECA adopted under amendments to an IMO treaty in 2008 that strengthened and expanded both the ECA emissions standards and the approval criteria.

The North American ECA is a key part of a comprehensive EPA program to address harmful emissions from large ships. Other elements include voluntary partnerships under EPA's Clean Ports USA program and implementation of a Clean Air Act rulemaking that EPA finalized last December.

The ECA extends up to 200 nautical miles along most of the US and Canadian coasts. France joined as a co-proposer on behalf of its island territories of Saint- Pierre and Miquelon, which

form an archipelago off the coast of Newfoundland. This is the first ECA adopted under the 2008 amendments to IMO MARPOL Annex VI treaty that strengthened and expanded both the ECA emission standards and the approval criteria.

Enforcing the ECA standards will reduce sulfur content in fuel to 1% effective August 2010, and to 0.1% from 2015. Also, Tier III NOx emission standards, requiring advanced emission controls such as SCR systems, will have to be met in the ECA from 2016. The US Environmental Protection Agency (EPA) harmonized its fuel and emission requirements for marine Category 3 engines with the IMO ECA regulations.

Once an IMO plan is adopted there needs to be 16 months for it to enter into force, meaning the Emissions Control Area would become mandatory around July 2011.

Cruise companies have said the plan sets arbitrary boundaries based on faulty science that overstates the health benefits, adding it would force them to switch to low-sulfur fuels that would dramatically drive up costs.

#### **34. DOT, EPA Adopt Fuel Economy and GHG Emission Levels for Cars and Light Trucks**

On April 1<sup>st</sup>, responding to one of the first major directives of the Obama Administration, the U.S. Department of Transportation (DOT) and the U.S. Environmental Protection Agency (EPA) jointly established historic new federal rules that set the first-ever national greenhouse gas emissions standards and will significantly increase the fuel economy of all new passenger cars and light trucks sold in the United States. The rules could potentially save the average buyer of a 2016 model year car \$3,000 over the life of the vehicle and, nationally, will conserve about 1.8 billion barrels of oil and reduce nearly a billion tons of greenhouse gas emissions over the lives of the vehicles covered.

DOT and EPA received more than 130,000 public comments on the September 2009 proposed rules, with overwhelming support for the strong national policy. Manufacturers will be able to build a single, light-duty national fleet that satisfies all federal requirements as well as the standards of California and other states. The collaboration of federal agencies also allows for clearer rules for all automakers, instead of three standards (DOT, EPA, and a state standard).

The final rules, issued by DOT's National Highway Traffic Safety Administration (NHTSA) and EPA, establish increasingly stringent fuel economy standards under NHTSA's Corporate Average Fuel Economy program and greenhouse gas emission standards under the Clean Air Act for 2012 through 2016 model-year vehicles.

Starting with 2012 model year vehicles, the rules together require automakers to improve fleet-wide fuel economy and reduce fleet-wide greenhouse gas emissions by approximately five percent every year. NHTSA has established fuel economy standards that strengthen each year reaching an estimated 34.1 mpg for the combined industry-wide fleet for model year 2016.

Because credits for air-conditioning improvements can be used to meet the EPA standards, but not the NHTSA standards, the EPA standards require that by the 2016 model-year, manufacturers must achieve a combined average vehicle emission level of 250 grams of carbon dioxide per mile. The EPA standard would be equivalent to 35.5 miles per gallon if all reductions came from fuel economy improvements.

Specifically, the new National Program:

- Reduces carbon dioxide emissions by about 960 million metric tons over the lifetime of the vehicles regulated, equivalent to taking 50 million cars and light trucks off the road in 2030.
- Conserves about 1.8 billion barrels of oil over the lifetime of the vehicles regulated.
- Enables the average car buyer of a 2016 model year vehicle to enjoy a net savings of \$3,000 over the lifetime of the vehicle, as upfront technology costs are offset by lower fuel costs

NHTSA and EPA expect automobile manufacturers will meet these standards by more widespread adoption of conventional technologies that are already in commercial use, such as more efficient engines, transmissions, tires, aerodynamics, and materials, as well as improvements in air conditioning systems. Although the standards can be met with conventional technologies, EPA and NHTSA also expect that some manufacturers may choose to pursue more advanced fuel-saving technologies like hybrid vehicles, clean diesel engines, plug-in hybrid electric vehicles, and electric vehicles.

In conjunction with the United States, Canada also announced Light Duty Vehicle GHG-Emissions regulations on April 1<sup>st</sup>. U.S. EPA and NHTSA have worked closely with Environment Canada to ensure a common North American approach.

### **35. Canada Proposes Harmonized Emissions Regulations for Vehicles**

Environment Canada on April 17 published draft regulations to harmonize Canada's greenhouse gas emissions standards for new vehicles with those being implemented by the U.S. Environmental Protection Agency. The proposed Passenger Automobile and Light Truck Greenhouse Gas Emission Regulations, issued under the Canadian Environmental Protection Act, would establish mandatory emissions standards for new vehicles starting in the 2011 model year, the department said in a statement accompanying the draft regulations in the April 17 Canada Gazette, Part I. "The proposed regulations also include provisions that establish compliance flexibilities designed to provide appropriate lead time for ... a smooth transition to a more stringent regulatory program," it said. "These flexibilities include a system for generating, banking, and trading emission credits that could be used to offset any emission deficits incurred." The draft regulations, which followed an April 1 announcement by Environment Minister Jim Prentice, are open to 60 days of public comment before publication in final form in the Canada Gazette, Part II.

### **36. EPA Chief Slams Attempted Delays on Climate Action**

The Environmental Protection Agency chief fought back against Senate attempts to challenge the agency's authority to regulate greenhouse gas emissions, saying delaying action would be bad for the economy. Senator Lisa Murkowski, a Republican from oil-producing Alaska, has introduced legislation to stop EPA from taking steps under the Clean Air Act on climate pollution from tailpipes and smokestacks. Democratic Senator John Rockefeller has also introduced a bill that would force a two-year delay on any EPA action, not stop it outright, as the Murkowski legislation would.



"Supposedly these efforts have been put forward to protect jobs," Lisa Jackson told a meeting at the National Press Club. "In reality, they will have serious negative economic effects."

Jackson said industry needs clear signals from the U.S. government on greenhouse gas regulations. Otherwise investors would have "little incentive" to put money into clean energy jobs. The country would fall further behind other countries in the race for clean energy, which would hurt the economy, she added.

Jackson said if EPA's regulation of greenhouse gas emissions was stopped, rules to make cars and light trucks become more efficient would be put on hold. That would leave "American automakers once again facing a patchwork of state standards," that could hurt profits at the companies which have experienced hard times already.

Jackson signaled there was room to compromise with industry in order to get a bill putting a price on carbon emissions. The U.S. energy and climate strategy should include incentives for offshore oil and natural gas drilling, as long as the environment is not hurt, she said.

"The energy strategy has to be varied and should include offshore drilling when it can be done in a way that is protective of the environment," Jackson told reporters at the National Press Club.

Senators John Kerry, a Democrat, Lindsey Graham, a Republican, and Joe Lieberman, an independent, are working on a compromise climate bill that could include incentives for offshore petroleum production and nuclear power. Jackson said she has met with Graham and Kerry on the bill and that it should also include incentives for alternatives, like offshore wind power, and energy efficiency.

### **37. States Sue EPA to Stop Greenhouse Gas Rules**

At least 15 U.S. states have sued the Environmental Protection Agency seeking to stop it from issuing rules controlling greenhouse gas emissions until it reexamines whether the pollution harms human health. Florida, Indiana, South Carolina and at least nine other states filed the petitions in the U.S. Circuit Court of Appeals in Washington, D.C. on Thursday, states said. They joined petitions filed last month by Virginia, Texas and Alabama.

The Obama administration has long said it would attack greenhouse gas emissions with EPA regulation if Congress failed to pass a climate bill.

The state petitions call for the EPA to reopen hearings on the so-called "endangerment finding" the agency issued last year declaring the emissions dangerous to people. "If EPA doesn't reopen the hearings we will move forward to try to stop them from regulating greenhouse gases," said Brian Gottstein, an assistant to Virginia's Attorney General Kenneth Cuccinelli.

The states have complained that the EPA relied too heavily from reports by the U.N.'s climate science panel which included information that exaggerated the melting of Himalayan glaciers.

The EPA said it was confident it would withstand legal challenges on the issue. "The question of the science is settled," spokeswoman Adora Andy said. The science "came from an array of highly respected, peer-reviewed sources from both within the United States and across the globe, and took into consideration hundreds of thousands of comments from members of the public, which were addressed in the finding," she said.

About the same number of states supports the EPA. In January, 16 states including New York and California asked the court for permission to support the EPA in industry lawsuits seeking to stop the agency from regulating the gases from stationary sources like power plants and factories.

### **38. House Bill Extends Ethanol Tax Breaks To 2016**

The U.S. government would extend ethanol tax breaks and a hefty tariff on imports until 2016 under a bill unveiled by two dozen lawmakers, reigniting the "food vs. fuel" debate. Unless Congress acts, three of the four incentives will expire at the end of 2010. Sponsors say a long-term extension will assure a home-grown fuel supply and bring cellulosic ethanol, tabbed as the new-generation biofuel, into commercial production.

Foodmakers, meatpackers, environmentalists and budget hawks attacked the bill as a wasteful subsidy and a contribution to higher food prices by using food crops to make fuel. Brazilians said they can make ethanol cheaper and deserve a shot at the U.S. market. The tax breaks are worth \$6 billion a year, say critics. They include a 45-cent a gallon tax credit for gasoline blenders, a 54-cent a gallon tariff on imports, a \$1.01 a gallon credit to cellulosic ethanol producers and a 10-cent a gallon small-producer tax credit for ethanol.

Ethanol makers distilled more than 10.75 billion gallons of the renewable fuel in 2009. The largest makers are Archer Daniels Midland Inc, privately owned POET and Valero Energy Corp.

While a small share of U.S. motor fuels, "that's the biggest thing we have done" to reduce reliance on imported oil, said John Shimkus, Illinois Republican, a lead sponsor of the bill. Earl Pomeroy, North Dakota Democrat, the other lead sponsor, said backers were allowing plenty of time to win passage.

A revival of the \$1 a gallon biodiesel tax credit, which expired at the end of 2009, is pending in Congress.

A federal law guarantees use of 12 billion gallons (45.5 billion liters) of ethanol this year and at least 36 billion gallons annually from 2022. Sixty percent of it would be advanced biofuels, such as ethanol from cellulose, found in grass, crop residue and woody plants.

Farm groups and ethanol trade groups said ethanol pays for itself through lower gasoline prices and smaller crop subsidy payments. If the 45-cent blender credit is rescinded, "nearly two out of every five ethanol biorefineries operating today would be forced to shutter, they said in a letter.

The blender credit, ethanol tariff and small-producer credit expire at the end of this year. The cellulosic credit expires at the end of 2012.

### **39. US Farm State Senators Offer Bill to Extend Ethanol Tax Credit**

On April 20<sup>th</sup>, US senators from agricultural states introduced legislation that would extend the federal ethanol tax credit through 2015. Failure to do so would cost 112,000 jobs nationwide and reduce domestic fuel ethanol production by 40%, they maintained. Sen. Charles E. Grassley (R-Iowa), the Finance Committee's ranking minority and the bill's primary sponsor, said the expiration of a separate biodiesel tax credit at the end of 2009 has cost 29,000 jobs and put 23,000 more at risk. "We can't risk a repeat performance with ethanol, where 112,000 jobs are at stake," he said.

Grassley added that the US already provides duty-free access to some ethanol imports under the Caribbean Basin Initiative, "but the CBI cap has never once been fulfilled," he said, adding, "In fact, last year, only 25% of it was even used by Brazil and other countries."

The bill would extend by 5 years until the end of 2015 the current 45¢/gal volumetric ethanol excise tax credit and the 10¢/gal small ethanol producers' tax credit, both of which are scheduled to expire on December 31<sup>st</sup>. The measure also would extend by 3 years the \$1.01/gal cellulosic biofuel producer tax credit, currently set to expire on Dec. 31, 2012, and extend by 5 years the ethanol tariff, which is scheduled to expire at yearend.

#### **40. Senators At Odds Over Climate Bill**

Two U.S. senators who have been part of negotiations on climate change legislation this year said they disagree with the carbon emissions reduction approach being developed in a compromise bill. Democratic Senator Maria Cantwell and Republican Senator Susan Collins late last year offered a streamlined "cap and dividend" bill to reduce U.S. greenhouse gas emissions blamed for global warming. It is competing against a more complex "cap and trade" bill passed by the House of Representatives last June and a more limited cap and trade compromise being worked on by a bipartisan group of senators.

"We probably still have a difference of opinion on creation of trading platforms," Cantwell told reporters. "There are some who believe that you actually have to have trading to have liquidity," she added. "I think a clear price market signal without volatility will unleash the investment."

But Senator Lindsey Graham, a South Carolina Republican working on the cap and trade bill, expressed strong opposition to the Cantwell-Collins approach for pricing carbon. "If you're a southeastern state or a Midwestern state where you're coal heavy, their approach basically collects money from your constituents and sends it to hydropower states and other states. It's sort of a redistribution of wealth I don't think people in my part of the world would accept," Graham said.

If the standoff continues it could further delay the climate bill. Democratic Senator John Kerry, the leading proponent of the compromise legislation, needs every vote he can get amid concerns from lawmakers from states whose economies are heavily reliant on fossil fuels.

Alaska Democrat Mark Begich, during a break in a closed meeting on the climate bill, told reporters that a provision to expand offshore oil drilling "absolutely needed" to include revenue sharing for states in that measure and "at this point that's in there."

U.S. Chamber of Commerce President Thomas Donohue, during a visit to Capitol Hill, said his business group was "positively and happily engaged in the discussion" on a compromise climate bill, but added that he didn't know whether Congress would be able to pass a bill. The chamber, the American Petroleum Institute and other industry groups are expected to meet again with Kerry.

Under cap and dividend, coal and oil companies, including importers of those carbon-polluting fossil fuels, would have to buy permits to cover emissions. The number of permits would decline over many years. Trading of permits would be limited to emitters. Also, consumers would receive checks each month to help cover the costs of more expensive alternative energy like wind and solar power used by utilities and factories.

But cap and trade -- at least for the utility sector initially -- is favored by Kerry, Graham and independent Senator Joseph Lieberman, according to industry and environmental officials briefed about the bill that is still being molded. Cap and trade would target pollution-reductions further downstream -- at utility, refinery and factory smokestacks. It could spark a global market for traded permits open to banks and brokers worth up to \$2 trillion.

The Cantwell-Collins approach attempts to tap into lawmakers' skittishness over creating such a huge new market for Wall Street and its potential for abuses, especially on the heels of widespread financial industry misdeeds. Financial players say keeping investors out of the market could be harmful.

The Kerry-Graham-Lieberman bill being drafted, according to sources, would establish a 4 billion-ton reserve for pollution permits that could be released to counteract any carbon price volatility. The reserve would help enforce a \$10-\$30 per ton price range.

#### **41. Senators Struggling Over Climate Compromise**

Vehicles are seen during rush hour on the 405 freeway in Los Angeles, California



U.S. senators writing a massive climate-change bill are struggling over how to reduce carbon dioxide pollution in the transportation sector, Senator Lindsey Graham said.

"The transportation sector is a problem," Graham told reporters. "We're just dealing with that."

Graham, a Republican, has been collaborating with Democratic Senator John Kerry and independent Senator Joseph Lieberman on a bill they hope to sketch out soon, but which will face an uphill fight this year.

Kerry, Graham and Lieberman had been looking at a "linked fee" on motor fuels, applied after oil is refined, as a way of handling the transportation part of the climate bill. That fee would have been linked to the price of carbon pollution permits for electric power utilities that would be traded on a regulated market. But according to press reports, there was strong backlash from other senators to the idea of a "fee," which opponents would label a tax on consumers that they would pay at the gasoline pump.

Some environmental sources have told reporters that the three senators have been looking at a substitute idea -- one that would have oil refiners buying pollution "allowances" that are based on the carbon content of their fuels.

Lawmakers are always gun-shy about any legislation that is perceived to be raising taxes, especially as they face elections in November for one-third of the Senate and the entire House of Representatives.

Carol Browner, President Barack Obama's top energy and climate adviser, said in a discussion on the White House website that Kerry, Graham and Lieberman will "present" their bill soon. "We are working with them and are very encouraged by this bipartisan group and the progress they are making," she said.

Whenever the compromise bill is unveiled, it is expected to spark a spirited discussion among senators, corporate lobbyists and environmentalists.

Democratic Senator Barbara Boxer of California, who helped write a climate change bill last year that Kerry, Graham and Lieberman are building upon, was asked whether she could support the new proposal if it does not protect climate-control initiatives already in place in her state. "We're very optimistic about how the bill will look vis-a-vis my state," Boxer said, but adding she had not yet seen the text of the Kerry-Graham-Lieberman bill.

Sources have told reporters that the bill will preempt some of the climate-control efforts of states and regions, while giving them latitude to continue their own energy-efficiency efforts. But Democratic Senator Carl Levin, who represents the automobile manufacturing state of Michigan, told reporters that his support for a compromise climate bill would vanish unless there is a strong federal standard for controlling carbon pollution emissions. If California gets an exemption, Levin told reporters, "That's the end of it for me ... that's not a national standard" if California wins a waiver, he said.

#### **42. California Says Climate Change Law Won't Hurt Economy**

California's economy will not be damaged by the state's 2006 climate change law and some sectors could thrive, a state agency said in a new report that counters fears in the business community that the measure will kill jobs and economic growth. The report from the state Air Resources Board, the chief regulator of the law, forecast higher energy costs but said these would be offset by greater overall energy efficiency.

The report also concluded that the measure will yield modest job gains statewide, will have a negligible effect on the state's overall economy and could benefit some sectors such as alternative energy businesses. "These policies can shift the driver of economic growth from polluting energy sources to clean energy and efficient technologies, with little or no economic penalty," the report said.

California often leads the United States in environmental issues. The debate in the most populous U.S. state coincides with one on the national level over whether steps to curb the greenhouse gas emissions will hurt the economy and kill jobs. Under the law, the state aims to reduce greenhouse gas emissions through a variety of steps such as tighter standards on car fuel efficiency, standards on energy efficiency in buildings, and a "cap and trade" market for pollution credits. Under cap-and-trade, carbon dioxide and other greenhouse gas emissions would be capped. Companies would need permits for the pollution they send into the atmosphere and those permits could be traded on a regulated market.

Critics in the business community in California say the state's aggressive plan will cut jobs and drive up energy prices. They forecast tens of thousands of job losses.

The report was issued after a previous analysis by the state released in 2008 was widely criticized as shallow and based on faulty assumptions. The new report, with input from a 16-member panel of outside experts, came up with similar findings as the previous one.

Annual state economy growth will be the same under the climate change law as it would be without it, officials said. "We made all the changes and found that the results were pretty much the same as they had been the first time around, which is very modest, almost undetectable overall effect on gross state product by 2020 but some modest improvement in areas of job growth and personal income," Air Resources Board Chairwoman Mary Nichols told reporters in a conference call.

"It is a competent report," Stanford University economist Larry Goulder, who was part of the panel that advised the state on the new analysis, said in another call with reporters. The cost to the economy of the climate change law will be between zero and about 1.5 percent of gross state product in 2020, Goulder said, and that roughly matched some other studies.

### **43. Industry's GHG Mitigation Outlays Made Impact, API-Backed Study Says**

More than \$58 billion invested in low-carbon technologies from 2000 to 2008 helped the US oil and gas industry reduce its greenhouse gas emissions by more than 48 million tons of carbon equivalent from 2007 to 2008, a study sponsored by the American Petroleum Institute estimates. The cuts are comparable to taking 9.7 million cars off the roads, the report by energy consulting firm T2 Associates said. "However, it needs to be recognized that other factors make specific linkage between aggregate emission and individual past investments problematic," it continued.

It said that while the report documents falling emissions from 2007 to 2008, US Energy Information Administration data show that domestic oil and gas drilling activity grew by 6.3% and gas production increased by 4.4% as crude oil production and refinery throughput declined by about 2.5%.

"Further, investments made can often take time to complete and result in emission reductions," the report noted. "Some of the reductions in 2007-08 are likely due to investments in early-to-middle years of the 2000-08 period."

It indicated that reductions from 2007 to 2008 fell into 3 major categories: Fuel substitution accounted for 46% of the cuts, largely reflecting enhanced methane management in natural gas supply and distribution systems. Non-hydrocarbon fuels (investments in wind and solar power systems) represented another 19%. And end-use efficiency improvements (outlays for combined heat and power) accounted for 35% of the total.

The study said that from 2000 to 2008, the carbon dioxide intensity of the US economy (measured as tons of carbon dioxide equivalent emitted per million dollars of gross domestic product) improved by more than 15% or 1.7%/year. Oil and gas industry investments in GHG mitigation technology over the last decade contributed to the decline, it said.

"At the national level, the decrease in US anthropogenic CO<sub>2</sub> emissions and intensity in 2008 resulted primarily from 3 factors: higher energy prices that led to a drop in petroleum consumption; economic contraction in three out of four quarters of the year, resulting in lower energy demand for the year as a whole in all but the commercial sector; and lower demand for electricity combined with lower carbon intensity of electricity supply," the report said.

GHG mitigation investments by the oil and gas industry from 2000 through 2008 significantly contributed to improved carbon intensity and the overall reductions as seen in the trend of improving intensity for the US economy during the period, it added.

#### **44. California to Ease Requirements on Existing Diesel Emissions**

On April 22<sup>nd</sup>, the California Air Resources Board decided to ease the nation's only regulations designed to curb diesel emissions from existing trucks and construction equipment. Exactly how far the California Air Resources Board will go in relaxing the two rules, however, will not be clear until the agency releases a detailed proposal later this year. With construction activity only half the level it was when CARB adopted the regulations, the expected emissions from these on- and off-road sources of diesel particulates and nitrogen oxides are below targets set in the regulations, according to the agency.

Also, CARB's discovery that it overestimated emissions from the off-road category creates an emissions "cushion" that allows the agency to make the rules less onerous in the early years, Tom Cackette, CARB's deputy executive officer, told reporters.

Under the regulations, owners must install diesel exhaust filters and replace engines and/or purchase newer equipment and vehicles on prescribed schedules over several years.

"It's clear there's a need for a new look at these rules," CARB Chairman Mary D. Nichols said April 22 at a meeting held at California Environmental Protection Agency headquarters. At the meeting, CARB's governing board directed staff to return in September with draft changes to the on- and off-road regulations that would give fleet owners added relief and flexibility, without compromising the need to protect public health and meet federal air quality standards. Board members also asked that the modifications reward companies that already have complied with regulations and examine opportunities for low-interest loans and other funding to help firms upgrade their fleets.

The off-road regulation, which CARB adopted in July 2007, applies to diesel engines over 25 horsepower, including those used in bulldozers, loaders, backhoes, tractors, skid steers, forklifts, belt loaders, aerial lifts, and airport ground equipment. Requirements vary depending on fleet size, beginning with the largest fleets.

CARB approved amendments to the off-road regulation last July, delaying some of the 2011-2012 requirements.

In February, the agency agreed to delay the March 1 implementation date until it obtains a Clean Air Act preemption waiver to enforce the regulation. The Environmental Protection Agency is expected to make a decision on the waiver for the off-road rule sometime this summer. No waiver is needed for the truck and bus regulation.

Adopted in 2008, the in-use heavy-duty diesel truck and bus regulation set tough standards for particulates and nitrogen oxides to be phased in beginning in 2011. The goal was to build a fleet of heavy-duty trucks and buses that by 2023 would meet the federal 2010 standard for new diesel engines. CARB indicated last December it would consider revisions to the on-road regulation given the economy's harsh toll on the trucking industry.

Both regulations were developed to achieve the emission reductions needed to bring the South Coast air basin in and around Los Angeles and the San Joaquin Valley into compliance with the federal standard for fine particulates (P.M. 2.5) by 2014.

Michael Kennedy, general counsel for the Associated General Contractors of America, urged CARB to eliminate the distinctions between fleet sizes in the off-road regulation and postpone all requirements until 2015. The contractors' group petitioned CARB in January to reconsider the off-road regulation.

Kennedy was among several witnesses testifying at the meeting who were critical of the flaws recently identified in CARB's emissions inventory for the off-road equipment. Those concerns were echoed by more than one of the governing board members. The best information available at the time was used in developing the original rule, Cackette said.

A University of California, Berkeley study released late last year found that CARB had overestimated the off-road emissions inventory by a factor of 3 to 4. A preliminary staff review of that report indicates the emissions data was off a factor of 1.2 to 4, CARB said. CARB's review of the data found there are about 174,000 pieces of off-road equipment statewide instead of the 190,000 it estimated in developing the regulation. Studies from the Associated General Contractors put the number is closer to 160,000.

Citing a newly released scientific study, the Associated General Contractors contend that future emissions of particulates from off-road equipment will remain low through 2019 and nitrogen oxides through 2025. "There is no scientific reason for the board to pursue its punishing off-road rule," Kennedy said. "Giving the industry a little more time won't put the air quality targets at risk, but will give thousands of construction workers a chance to resume their careers and rebuild their lives."

CARB said it needs to review the latest report commissioned by the Associated General Contractors and that it is continuing to refine its emissions data. For example, newly available regional information revealed more heavy-duty diesel trucks in Southern California than believed and fewer in Northern California, according to Cackette.

Preliminary estimates show emissions of particulates and nitrogen oxides will be 21 tons a day to 42 tpd lower in 2014 than expected when the rule was adopted, CARB said.

CARB plans to hold a series of workshops in May and June in Los Angeles, Sacramento, and Fresno to solicit comment from stakeholders and the public about proposed revisions to both regulations.

#### **45. Teamsters and Cities Weigh In On Global Warming Ballot Initiative**

The California Teamsters, one of the state's most powerful unions, has joined opponents of a proposed ballot initiative to delay enforcement of the Global Warming Solutions Act. The Teamsters, representing more than 250,000 union members in California, is the first major union to officially oppose the measure, which is backed by a group of oil companies, Republican legislators and conservative activists. The group is gathering signatures to place the initiative on the November ballot.

"We must reject efforts to move backwards on protection of the environment," said Randy Cammack, co-chair of the Teamster's Public Affairs Council, which voted against the ballot



measure. "Our members are citizens and neighbors as well as workers. We breathe the same air, drink the same water, and live on the same planet with every other human being. ...There is no inconsistency between protecting our environment and building a strong and vibrant economy."

The trucking industry sees it differently. The California Trucking Assn. has endorsed the ballot measure, which proponents are calling the California Jobs Initiative. The trucking association, which represents 3,600 members who own 350,000 trucks, has been locked in conflict with the California Air Resources Board over air pollution rules for diesel emissions. The diesel emissions law, a measure to slash cancer-causing pollution, is separate from the climate law, which would curb carbon dioxide and other greenhouse gases. Valerie Liese, chairwoman of the trucking association, said the climate law would drive manufacturers out of state, resulting in fewer customers for truckers.

The Teamsters' vote came a day after the 48-member governing board of the League of California Cities rejected a proposal to ask Gov. Arnold Schwarzenegger and the California Air Resources Board to consider delaying enforcement of AB 32, the climate law. Los Angeles City Council member Wendy Gruel led the opposition to the roll-back proposal, according to the law's supporters. The San Francisco Chronicle reported that Richard Dixon, the mayor pro-tem of Lake Forest in Orange County, told colleagues it would cost as much as \$3 million for Orange County to comply -- a figure disputed by others attending the meeting. (NOTE: This post was updated to reflect the fact that the League rejected the roll-back proposal, but did not alter its neutral position on the law itself)

The proposal also unsuccessfully sought to delay implementation of regulations under SB 375, a law that rewards cities and counties for concentrating development in denser clusters to reduce automobile traffic that is a major cause of traditional air pollutants and also of greenhouse gases that are trapping heat in the atmosphere.

California's 2006 climate law, the toughest in the nation, would require the state to slash its carbon footprint by 15% over today's levels by 2020. Curbs on industry, automobiles and other sectors would begin to take effect next year, unless they are delayed by the ballot proposition. GOP gubernatorial candidates Steve Poizner and Meg Whitman also have endorsed a delay in the law, while Democrat Jerry Brown supports the current effort to implement the law.

#### **46. EPA Seeks Public Comment on Aircraft Lead Emissions Data**

The U.S. Environmental Protection Agency (EPA) is requesting comment on data available for evaluating emissions and potential exposure to lead in gas used in piston-engine aircraft. Lead exposure is of special concern with young children because it puts them at risk for a wide range of health impacts, including lowered IQ and behavioral disorders.

Since 1980, U.S. lead emissions have decreased by more than 90 percent. EPA also recently issued national air quality standards for lead that are 10 times tighter than the previous standards. There is no known safe level of lead in the body. Lead emissions from aviation gasoline accounts for about half the nation's lead inventory. There are about 20,000 airport, heliports, and similar facilities nationwide that use leaded gasoline.

The advanced notice of proposed rulemaking being announced today describes the data that are currently available and being collected that would help evaluate health impacts from piston-engine aircraft emissions. This action describes considerations regarding emission engine

standards and requests comment on approaches for transitioning the piston-engine fleet to unleaded gas.

This action will be open for a 60-day comment period upon publication in the Federal Register. EPA will review comments and make a determination as to whether aircraft lead emissions cause or contribute to air pollution, which may reasonably be expected to endanger public health or welfare. By law, EPA in consultation with the Federal Aviation Administration would be required to issue standards if a positive finding were made.

#### **47. Canada Proposes to Exempt Racing Vehicles from Lead Limits in Gasoline**

Environment Canada is seeking comment on draft regulations to permanently exempt competition vehicles from prescribed lead limits in gasoline to maintain the Canadian racing industry's viability. Since 1994, the government has issued annual temporary exemptions for competition vehicles from the provisions of the Gasoline Regulations related to lead content. The latest temporary exemption expired Dec. 31, 2009, the department said in a regulatory impact analysis statement published with the draft regulations in the April 3<sup>rd</sup> issue of the Canada Gazette, Part I.

“Although high-octane, non-leaded fuels exist, several United States-based sanctioning bodies sanction the use of leaded gasoline in their rulebooks. If the exemption is not renewed, large Canadian events sanctioned by these bodies would likely be cancelled, other stakeholders may not be able to compete, and socio-economic impacts would begin to accrue at the outset of the 2010 racing season,” it said. “Given the high degree of integration between the Canadian and U.S. markets, the proposed amendments would align Canada's action ... with similar action in the United States.”

The department noted that the government will take other steps to help the racing industry end the use of leaded gasoline to reduce health impacts from lead exposure.

The draft regulations are open to 60 days of public comment. When finalized, the regulations will be published in the Canada Gazette, Part II.

#### **48. Canada's Carbon Emissions Fell in 2008, Report Says**

Canada's greenhouse gas emissions decreased by 2.1 percent in 2008 to about 734 million metric tons, Environment Minister Jim Prentice said on April 15<sup>th</sup>. The emissions figure—which represents a decrease of 0.8 percent compared to 2003—is largely the result of increased clean energy generation and the slowdown in economic growth at the end of 2008, Prentice said in a statement accompanying release of the government's annual greenhouse gas inventory report to the United Nations Framework Convention on Climate Change. The 2008 figure confirms that Canada is on track to achieve its pledge under the Copenhagen Accord for a 17 percent reduction in emissions from 2005 levels by 2020, he said. In addition to the Clean Energy Dialogue with the United States and harmonization of mandatory vehicle emissions standards starting with the 2011 model year, Canada also intends to harmonize approaches with the United States on greenhouse gas emissions from heavy-duty vehicles, ships, and trains, he said.

### **ASIA-PACIFIC**

#### **49. New Policy to Encourage China's Carmaker Consolidation**

The Chinese central government plans to implement a new policy in the first half of this year to encourage auto industry consolidation and further the development of Chinese-brand passenger vehicles, an official from the Ministry of Industry and Information Technology said at a recent news conference. It reportedly intends that Chinese-brand passenger vehicles will comprise at least half of vehicle sales by 2015 and sedans made by entirely domestic automakers will have about 40 percent of the nation's car market.

Statistics from the China Association of Automobile Manufacturers (CAAM) show that 4.58 million Chinese-brand passenger vehicles were sold last year, some 44.3 percent of the total. Sales of domestic sedans hit 2.22 million units, almost 30 percent of the segment.

The new policy will also focus on accelerating consolidation between automakers and could lead to a new round of reshuffling.

China became the world's largest auto producer and market last year with both production and sales surpassing 13.5 million vehicles due in part to government incentives.

There are now more than 130 carmakers across the country, but most of them are small enterprises with annual production and sales of fewer than 10,000 units. Only five had sales of more than 1 million units last year as the country's top 10 carmakers moved a total of 11.89 million vehicles to account for 87 percent of overall sales, according to market data.

Last year, Chang'an Motor Corp acquired two minivan makers - Hafei and Changhe - as well as engine producer Dong'an Auto from the Aviation Industry Corp of China (AVIC), marking the biggest asset deal ever between State-owned auto companies. Chang'an is the fourth-largest motor group in China and the local partner of US carmaker Ford Motor and Japan's Mazda and Suzuki. After the acquisition, Chang'an's 2009 sales were only 30,000 units behind Dongfeng, the country's third-largest motor group.

Guangzhou Automobile Group Corp, the country's sixth-biggest automaker, bought a 29 percent stake of Shanghai-listed SUV maker Changfeng Motor Co Ltd for 1 billion Yuan in May last year.

Beijing Automobile Industry Holding Corp, China's fifth-largest carmaker, reportedly finalized a deal last month to buy a 40 percent stake in Daimler AG's van joint venture with Fujian Motor Industry Corp.

By 2012 policymakers hope consolidation will result in two to three large-scale auto groups, each with annual production capacity surpassing 2 million units, and four to five companies with annual output of more than 1 million vehicles, according to the national auto industry revitalization plan released in March last year.

The current top-four Chinese motor groups are SAIC Motor Corp, FAW Group, Dongfeng Motor and Chang'an Motor. Carmakers including Beijing Automobile, Guangzhou Automobile, Cherry, Geely and Sinotruk form the second tier in the country's auto industry.

Li Yizhong, minister of Industry and Information Technology, said recently that in addition to fueling industry consolidation, the government will also implement measures to encourage domestic automakers in reaching overseas this year through investment, acquisition of foreign brands, building research and development facilities and developing sales networks. Industry sources reportedly said that the new policy calls for 20 percent of overall sales by major auto groups to be generated overseas in the next few years.

In the wake of the financial crisis, China's vehicle exports fell sharply by 45.7 percent to 369,600 units last year, according to statistics from the General Administration of Customs. Industry analysts generally expect a rebound in car shipments this year as the foreign markets begin to recover.

Despite the poor export performance, Chinese companies were aggressive in acquiring overseas assets in 2009. Homegrown carmaker Geely's bid for Swedish luxury brand Volvo received a lot of media exposure in 2009. The Zhejiang-based company recently closed the deal. Beijing Automotive also bought some of Swedish carmaker Saab's core assets and technologies for \$200 million last year.

Li noted that along with encouraging acquisitions and consolidation, the government will restrain overcapacity in the auto industry.

Li also said that the ministry will accelerate the development of new energy vehicles, including hybrid, pure electric and fuel battery models. The new policy will reportedly stipulate that Chinese partners hold at least a 50 percent share in newly built Sino-foreign joint ventures that produce core parts for alternative-energy vehicles.

#### **50. Diesel Engines - A More Viable Green Solution for China's Auto Industry?**

China is reportedly eyeing diesel engines as a more viable green solution for its growing auto industry. A new diesel engine plant has just debuted in North China in a bid to boost the production of diesel engine sedans in the country.

Hybrid cars, ethanol cars, cars that run on fuel cells and solar energy...As Chinese people become increasingly conscious of the environment, this kind of green industry jargon seems to dominate talk of the future prospects for green cars here. But diesel engines, a highly developed and more fuel efficient solution that delivers quick results in auto emissions reductions is still an unknown in China. As of now, diesel engine sedans can hardly be found anywhere on the Chinese mainland.

To help change the situation, Hawtai Automobile International, based in Beijing, has just opened a sedan diesel engine plant in northern China's Inner Mongolia Autonomous Region that produces 300,000 diesel engines a year.

But experts also point out that there's long been a shortage of diesel supplies in China. The country needs to increase diesel output if it wants to push for a robust development of diesel engine sedans in China.

#### **51. Tackling Climate Change 'Urgent,' Hu Says**

China's highest leadership began considering proposals from the country's senior researchers in an attempt to help achieve the country's ambitious goal of cutting carbon intensity by 40 to 45 percent by 2020. The move is a sign that China will roll out more economic and industrial policies to tackle climate change this year when drawing up the development roadmap for the 12th Five-Year Plan (2011-2015).

The political bureau of the CPC Central Committee has raised climate change as their study topic for the second time during the past two years. The leadership usually holds study

meetings every one or two months. At the study meeting in Beijing, President Hu Jintao said China is committed to fighting climate change, and the leadership will be working hard to mobilize efforts to realize the goal, which China came up with shortly before the Copenhagen summit.

Ever since November 26<sup>th</sup> 2009, when China pledged to cut carbon intensity by 40 to 45 percent (from 2005 levels) before 2020, China's leaders, especially Premier Wen Jiabao, have been involved in intensive diplomatic efforts, including wide-ranging telephone talks with world leaders, to move forward the Copenhagen agenda.

"We must fully recognize the importance, urgency and difficulty of dealing with climate change," Hu said in an address to other high-ranking leaders after listening to lectures by Pan Jiahua, senior researcher with Chinese Academy of Social Sciences, and Xu Huaqing, director of the Energy Research Institute affiliated with the National Development and Reform Commission. "We must make it an important strategy for our socio-economic development," Hu said.

Energy saving, emissions cuts and environmental awareness must be inculcated into not only every government worker, but Chinese society as a whole, Hu said.

The Chinese Premier recently wrote separate letters to Rasmussen and UN Secretary-General Ban Ki-moon, informing them that China positively evaluates and supports the Copenhagen Accord, a political agreement achieved last December after 192 UN members met in the Danish capital. In the letter, Wen pointed out that the Copenhagen Accord reflected the political will of all parties to actively tackle climate change, reaffirmed the principle of "common but differentiated responsibilities" and upheld the dual-track negotiating mechanism of the UN Framework Convention on Climate Change and its Kyoto Protocol. The letter reaffirmed China's commitment to advancing international cooperation on tackling climate change and the direction for future negotiations.

Wen also said China will do its best to honor its commitments on climate change, including a reduction of carbon dioxide emission intensity per unit of GDP by 40 to 45 percent by 2020 against 2005 levels; increasing to 15 percent the use of non-fossil fuels in the country's total primary energy mix by 2020; and an increase of 40 million hectares of forest and 1.3 billion cubic meters of forest volume by 2020 from 2005 levels.

Wen also confirmed that China will continue to play an active and constructive role and work jointly with the international community for a meaningful conclusion of the Bali Roadmap negotiations at the Mexico Climate Talks, with the aim of achieving a comprehensive, effective and binding outcome that will reinforce the implementation of the convention and the protocol.

## **52. Outdated Vehicles Mess Up Kathmandu Valley's Traffic**

It's been 70 years since the oligarchic Rana rulers introduced motors as a means of transportation in Kathmandu in 1940. The Ranas had brought the first ever motor through Bhimphedi of Makawanpur by using dozens of local youths.

With the fall of the Rana regime and the country's tryst with the modern era, commoners also started bringing a variety of vehicles -- buses, auto-rickshaws and motorcycles -- into the valley. At present, hundreds of thousands of vehicles ply across the country. And, a majority of them vie for a little space in the already crowded valley. Despite the steady increase in the number of vehicles, the government is yet to wake up to displace the outdated vehicles. The Department of

Transport Management (DoTM) has repeatedly urged the government to displace outdated vehicles especially from the valley, but to no avail.

“Ever since the Ranas brought the first motor in the valley, everybody is just importing new ones; nobody is displacing them,” says Anil Gurung, director at the department. “Some vehicles are older than us.” He says the need of displacement of outdated vehicles is urgent. “Our traffic system will not improve unless we displace the older vehicles,” he says.

A committee headed by Sharad Chandra Poudel, director general of DoTM, has recommended the government to displace over 20-year-old vehicles from the valley by providing 75 per cent discounts on customs duty while importing new ones. Barring only two exceptions, the government has never displaced old vehicles. In 1999, the government had displaced old three-wheelers, known as Bikram tempos, by providing discounts on customs duty to their owners. Similarly, in 2007, the government announced discount on customs duty to those who wanted to displace their private cars.

According to DoTM, there are 3,500 outdated vehicles in the valley. Of them, just 525 are off the roads. Similarly, of the total 5,100 outdated vehicles across the country, just 765 have been scrapped. This means that most of the outdated vehicles are still plying regardless of their poor condition, worsening the already messed up traffic system.

However, Kamal Raj Pande, joint secretary at the Ministry of Physical Planning and Works, says that the number of outdated vehicles is higher. At a recent interaction with lawmakers, Pande said that almost 10 per cent of vehicles are over 20 years old. A total of 805,614 vehicles of all sorts have been registered at DoTM.

### **53. Cummins Receives Order for Natural Gas Engines for India**

Cummins Westport Inc. (“CWI”), a leading provider of high-performance, alternative fuel engines for the global market, and Cummins India Ltd. (“CIL”) have announced that CIL has received purchase orders for 460 natural gas engines to customers outside of Delhi. The B Gas Plus and B Gas International engines, powered by compressed natural gas (CNG), are licensed by CWI and manufactured by CIL.

The Government of India unveiled a transport stimulus package on February 3, 2009, to provide central funding to purchase buses for urban transport systems. The Ministry of Urban Development will provide financial assistance for purchasing public transport buses, as part of a national effort to reduce the use of private vehicles and control congestion. The Jawaharlal Nehru National Urban Renewal Mission (JnNURM), a government program, has allocated \$58 billion to 63 cities to help modernize and improve quality of life.

According to NGVAmerica, the New Delhi Natural Gas Vehicle Program has halved the air pollution in comparison to ten years ago. Approximately 60,000 auto rickshaws in New Delhi, India were required to convert to compressed natural gas (CNG) for fuel. A decade later, the government has issued a report hailing the success of the program, showing that, while the number of vehicles on the road has doubled, the pollution rate has halved. Outside of New Delhi, ten other major Indian cities also have aggressive natural gas vehicle conversion programs. As a result, the amount of petroleum used in the country has been cut dramatically from projected levels—a significant and cost-saving achievement for a country that has to import 70% of its diesel and gasoline.

## 54. Energy Security Worry To Drive India's Low-CO2 Plan

Worries over energy security will drive India's goal to slow the growth of its carbon emissions, the head of a government panel tasked with developing the country's low-carbon strategy said. Reserves of fossil fuels such as coal were fast running out, making it imperative for India to improve efficiency and accelerate renewable energy sources to keep the economy growing at a projected 8 to 9 percent annually, Kirit Parikh said.

India, the world's fourth-largest carbon emitter, is under pressure to cut pollution in the fight against climate change. While per-capita emissions are still low, demand for electricity and fossil fuels is increasing as the middle class clamors for more cars, TVs and better housing.

"If the Indian economy is not concerned at all with climate change ... and follows the business-as-usual path, the reality is even in business-as-usual we have to change from what we are today," Parikh told the press. "These are your imperatives in any way from your energy security point of view because we are very short of oil, very short of gas." "We need to find in the next 20, at the most 30 years, an alternative to coal-based power plants. That will be required in a business-as-usual scenario."

In India, any talk of a low-carbon economy was once seen as politically very risky, given the economic costs involved. But Prime Minister Manmohan Singh in January asked Parikh to begin charting a path to a greener economy. The panel's preliminary report is due next month and the final submission in September.

Although India has announced a new climate plan which identifies renewable energy, such as solar power, as a key element, coal remains the backbone of energy supply in a country where almost half the 1.1 billion population has no access to electricity.

The country has 10 percent of the world's coal reserves, the biggest after the United States, Russia and China. Most of India's coal is inferior in quality and highly polluting. About 70 million tons of coal is imported each year, mostly for making steel. India plans to add 78.7 gigawatts of power generation during the five years ending March 2012, most of it from coal, which now accounts for about 60 percent of the nation's energy mix.

By comparison, renewables such as wind, solar and biomass contribute only 8.8 percent to generation and, though there are plans to scale up solar power generation to 20 gigawatts by 2022; it depends on international finance and technology.

A landmark nuclear deal with the United States might herald a new chapter in clean energy in India, but long planning and building periods for nuclear reactors and high cost are deterrents.

Parikh said given the dependence on coal, the only way forward was to enhance the efficiency of coal-based power plants by using technology such as super-critical boilers which would help cut coal use by about 20 percent. "In 10 years' time, half of my plants should be more efficient. In another 10 years, 75 percent of the plants should be more efficient," he said.

India last year set a goal for slowing the growth of its emissions, saying it will try to rein in its "carbon intensity" -- the amount of carbon dioxide emitted per unit of economic output -- by between 20 and 25 percent by 2020, from 2005 levels. Parikh said the target was achievable without a major shift in policy keeping in view the fact that India's energy intensity -- the amount of energy used to produce one unit of GDP -- has been coming down.

He said it was too early to estimate the economic cost of shifting to a low-carbon economy and the panel would initially only identify areas of opportunities such as in the power, transport and construction sectors.

Parikh said increasing energy efficiency was not enough because enhanced efficiency would lead to higher energy demands. "... activities become more productive, larger value-adding takes place, incomes go up, people demand more, growth takes place and the total energy demand goes up," he said.

### **55. Hong Kong, Taiwan Suffer From Chinese Sandstorms**

Hong Kong's harbor was cloaked in thick smog as air pollution soared to record levels ahead of the Hong Kong Sevens rugby tournament, the city's premier sporting event. Taiwan, too, was hit by what are being called the worst sandstorms in 25 years, though particulate levels had begun to decline and there were no findings of airborne toxins.

Sandstorms from northern China were mostly blamed, with a second dust storm hitting Beijing, though state media said it was not as severe as the first, which blanketed the city with a layer of fine dust and turned the sky orange.

The official Xinhua news agency said the sand, carried by strong winds, had also affected Inner Mongolia, as well as Shanxi and Hebei provinces.

Hong Kong's environmental protection department said local air pollution indices soared to levels of around 500, smashing the previous record of 202 recorded in July 2008. A reading above 51 is considered high. People with heart and lung diseases were urged to avoid outdoor activities amid what were described as "severe" readings.

Hong Kong experts are studying the contents of the latest smog but a public health academic warned it came after a week of serious air pollution. "We don't know what this air is made of ... but it is possible that it is not as toxic as the air that is coming out of the tailpipes of old trucks in Hong Kong or old power station chimneys, or ship funnels going into the harbor and the port," said Anthony Hedley, chair professor of the School of Public Health at the University of Hong Kong.

"The interesting thing may be that it is coming on top of several days of fairly intense exposure to mostly Hong Kong-made pollutants and some other of parts of the Pearl River Delta," Hedley told reporters. Pollutants included particulates, nitrogen dioxide, sulfur dioxide and ozone.

Hong Kong's patchy air quality has been a controversial social issue in recent years, tarnishing the city's reputation as a financial hub versus greener rival cities like Singapore. It has also affected the health of many of its citizens.

According to the Hedley Environmental Index, which monitors and publishes in real-time the economic costs of Hong Kong's air pollution, the bad air would have resulted in 175 premature deaths and 1.29 million visits to the doctor so far this year. It would also have resulted in an estimated loss of HK\$394 million (\$51 million) in healthcare costs and lost productivity.



While officials have strived to clean up vehicles and power stations locally, pollutants blown in from tens of thousands of factories in southern China's manufacturing and export hub on the Pearl River Delta have also had a serious impact on air quality.

### **56. Innospec Limited Guilty of Bribery to Sell Leaded Gasoline in Indonesia**

Innospec Limited has appeared at Southwark Crown Court and pleaded guilty to bribing employees of Pertamina (an Indonesian state owned refinery) and other Government Officials in Indonesia in order to secure sales of a fuel additive, TEL. Lord Justice Thomas has reserved his sentencing remarks. However in open Court he stated that there would be financial penalty of \$12.7 million imposed on Innospec.

This case is part of the first "global settlement" reached with a co-operating Company and has been resolved in cooperation with US government authorities - DOJ, SEC and OFAC.<sup>2</sup>

The company, Innospec Limited, is a subsidiary of Innospec Inc., a NASDAQ listed company based in the U.S., and is a manufacturer of a lead based anti knock fuel additive called tetraethyl lead ("TEL"). Innospec Limited is based in Ellesmere Port, Cheshire and is believed to be the last manufacturer of TEL. TEL cannot be sold in Europe or the USA for motor vehicles on health and environmental grounds, however the company continued the production and sale of TEL in regions where it remained lawful, such as Indonesia.

The company indicated it would plead guilty to this offence at the first opportunity.

Following the publication of the report from the United Nations Independent Inquiry Committee into the Oil for Food Program on 27 October 2005, the US Department of Justice ("DOJ") commenced an investigation into Innospec Inc. for both sanctions offences and corruption offences. The investigation was referred to the SFO by the DOJ in October 2007 and on 23 May 2008 the SFO formally accepted the corruption case for investigation. Subsequently, the company disclosed to the SFO evidence that the company had sought to influence decision-makers in public contracts for the purchase of TEL in Indonesia between 1999 and 2006.

In order to conduct its business in Indonesia, the company appointed agents to act on its behalf in seeking to win or continue contracts to supply TEL. Between 14 February 2002 and 31 December 2006 (the indictment period), the company paid US\$ 11.7 million to its agents. From these commissions, bribes were paid by the agents to staff at the state-owned petroleum refinery, Pertamina, and other public officials who were in a position to favor the company by purchasing orders of TEL.

Payments were made in an attempt to ensure that Pertamina favored TEL over unleaded alternatives.

The agents acted under the instruction of the company and the commission fees paid were authorized by the company. The company accepts that it knew that a proportion of the commission funds would be used to bribe both Pertamina officials and other public officials at higher regulatory or ministerial levels, with influence over the purchase of TEL.

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<sup>2</sup> Department of Justice; Securities & Exchange Commission and U.S. Department of the Treasury's Office of Foreign Assets Control

In addition to commissions, the company also created 'ad hoc' funds. These funds assisted specific or 'one-off' arrangements with particularly influential individuals within Pertamina or at a political level. One particular fund was structured to protect the interests of the lead based additives industry, whereas in truth and reality, it was no more than a slush fund to corrupt senior officials in various Ministries with the intention of blocking legislative moves to ban or enforce the ban on TEL on environmental grounds and/or seeking a higher level buy-in to continued yearly supplies of TEL to Pertamina.

The Indonesian Government's intention to go lead-free, initially conceived in 1999, was not realized until 2006.

The SFO was given consent by the Attorney-General to bring these proceedings on 2 November 2009. The company was summonsed on 24 February 2010 on the charge of conspiracy to corrupt, contrary to section 1 of the Criminal Law Act 1977:

"Innospec Limited, between the 14th day of February 2002 and the 31st day of December 2006, conspired with certain of its directors, executives, employees and agents to give or agree to give corrupt payments [contrary to section 1 of the Prevention of Corruption Act 1906] to public officials and other agents of the Government of Indonesia as inducements to secure, or as rewards for having secured, contracts from the Government of Indonesia for the supply of Tetra Ethyl Lead to the said Government of Indonesia by Innospec Limited."

On 25 February 2010, the case was sent from Westminster Magistrates' Court to Southwark Crown Court and listed for a preliminary hearing on 4 March 2010. After two preliminary hearings, on 4 March 2010 and 11 March 2010, the case was listed for plea and sentence on 18 March 2010.

The company agreed that it would be subject to financial penalties and the SFO carried out an investigation into the Company's ability to pay. This exercise involved the SFO's investigators working with SEC staff in coming to a fair and true assessment of the Company's means to pay financial penalties.

The SFO concluded that the amount available in the UK was a total of \$12.7 million. Lord Justice Thomas has indicated that the company will be sentenced to pay \$12.7 million or the sterling equivalent.

In a first for both the SFO and DOJ, these prosecuting authorities have agreed to the appointment of a joint monitor, to be acceptable in both the UK and US. The company has also agreed to pay the costs of a monitor for up to three years.

This plea was reached as a result of the SFO, the U.S. Department of the Treasury's Office of Foreign Assets Control ("OFAC"), the U.S. Securities and Investments Commission ("SEC") and the DOJ (together the "government authorities") resolving this case by co-operating together to investigate and prosecute the company's conduct in both Indonesia and Iraq.

The company was prosecuted by the DOJ for offences in relation to the breach of United Nations sanctions from 2000 to 2003, as they applied to contracts in the UN Oil for Food program. As part of the U.S. plea agreement for this conduct, the company agreed to pay a \$14.1 million criminal fine.

As a consequence of Innospec Inc's listing on the NASDAQ, the parent company is regulated by the SEC. Innospec Inc has settled a civil complaint filed by the SEC, charging the parent company with violating the Foreign Corrupt Practices Act's anti-bribery and books and records provisions relating to conduct in Iraq. A fine of \$11.2 million in profits will be paid to the SEC.

Finally, the company has agreed to pay an administrative fine of \$2.2 million to OFAC, relating to matters regarding the US embargo against Cuba.

### **57. Japan to Extend Tax Incentives to Boost Sales of Next-Generation Vehicles**

On April 12<sup>th</sup>, Japan's Ministry of Economy, Trade, and Industry announced that the government would extend subsidies, tax relief, and other incentives to boost production and sales of next-generation vehicles like hybrid, all-electric, and fuel cell models. With the extra incentives, the government hopes sales of next-generation vehicles will make up 50 percent of the market by 2020, up from 9 percent in 2009, the ministry said.

The ministry's Next-Gen Motor Vehicle Strategy 2010 also seeks to boost sales of fuel-efficient vehicles and low-polluting automobiles, like clean diesel vehicles. All told, the government hopes to have next-generation, fuel-efficient, and clean vehicles make up 80 percent of all cars sold in Japan by 2020, up from less than 20 percent now.

Some automakers, however, are projecting that next-generation vehicles will comprise only 20 percent, not 50 percent, of new car sales by 2020 because they generally have higher prices than regular vehicles.

An official in the ministry's automotive division acknowledged that the strategy's targets would be difficult to meet, but said sales of next-generation vehicles would continue if the government continues extending subsidies and tax breaks beyond September 2010, when current programs expire. In its 2009 budget, the government allocated \$2.2 billion in tax breaks for new vehicles, plus another \$3.8 billion in incentives to trade in older cars.

To meet the strategy goals, the ministry said the price of lithium-ion batteries used in electric and hybrid vehicles must be reduced to one-seventh their 2006 price by 2015. It also said Japan needs to secure rare metals from overseas mines and to build infrastructure, such as installing at least 2 million electricity charging bays for electric vehicles and plug-in hybrids.

According to the ministry, the strategy could help reduce greenhouse gas emissions in Japan and across the globe, as any new low-emission vehicle technologies could be exported to other countries. However, the ministry's announcement did not specify greenhouse gas emissions reduction targets or other data.

Under the strategy, hybrid vehicles are projected to make up 20 percent to 30 percent of total domestic vehicle sales by 2020, the ministry said. Electric vehicles should comprise another 15 percent to 20 percent of the market, the ministry projected, while fuel cell vehicles will account for about 1 percent of all vehicle sales by the end of the decade.

In 2009, Japan's domestic motor vehicle sales fell 9.3 percent to 4.61 million, marking the fifth consecutive year sales have declined. The drop is due in part to the country's shrinking population and to the aging of its residents. Japan's population of 127 million is projected to fall to less than 100 million over the next 50 years.

## **58. Hong Kong to Retire Older, More Polluting Buses**

All commercial and public buses in the Hong Kong Special Administrative Region that do not meet Euro II air pollutant emissions standards will be retired by 2019, Environment Secretary Edward Yau told lawmakers on March 17<sup>th</sup>. Hong Kong will phase out buses based on the emissions standards that they meet. Buses that do not meet any of the Euro emissions standards will be retired by 2012. Buses that meet Euro I standards will be retired by 2015, and Euro II buses will be phased out by 2019. Yau said retiring all the buses on schedule would save the administrative region \$24.3 billion HKD (\$3.1 billion). The government is working with bus companies to replace older buses with more environmentally friendly ones and to reduce emissions with low-emission zones and better route planning. It also is assessing the possibility of retrofitting Euro II and Euro III buses with systems to reduce their nitrogen oxide emissions, Yau said. Bus companies continue to resist test programs of this technology, however.

## **59. Hong Kong, Guangdong to Work Together On Pollution, Clean Cars**

On April 7<sup>th</sup>, the Hong Kong Special Administrative Region and neighboring Guangdong province signed an agreement to cooperate more closely on planning and development in China's Pearl River Delta, including the alignment of key policies affecting the environment. The agreement, signed by Hong Kong Chief Executive Donald Tsang and Guangdong Governor Huang Huahua in Beijing, formalizes several previously agreed upon environmental initiatives in one document.

According to a statement issued by Hong Kong, the agreement will help to incorporate development policies of the neighbors into China's national 12<sup>th</sup> Five-Year Plan (2011-2015), will detail annual goals for the two governments, and will set targets for local cooperation on development plans.

The agreement includes goals for outlining objectives for the 2011-2020 Pearl River Delta Regional Air Quality Management Plan by the end of 2010, for further joint research on air pollution in the region, and for improving the Pearl River Delta Regional Air Quality Monitoring Network, all for the purpose of developing "common air pollution control."

The agreement states that Hong Kong and Guangdong should cooperate on creating fuel and emissions standards for vehicles and ships more stringent than the national level.

The agreement also states that by the end of 2010, a Hong Kong-Guangdong Cleaner Production Partnership Program should be implemented. It would use Hong Kong businesses' expertise to guide environmental assessments, demonstration projects, and environmental certification services in Guangdong province.

The agreement calls for the establishment of marine environment monitoring networks and coastal wetland conservation projects, including restoration of mangrove forests in the Pearl River Estuary.

The agreement also states that the partners should jointly foster research and development of electric vehicles, support the growth of a manufacturing and parts industry for electric vehicles, and encourage use of electric vehicles, specifically in major urban areas such as Hong Kong, Shenzhen, and Guangzhou, capital of Guangdong province.

## **60. Beijing Resolves to Boost Energy Efficiency, Encourage Green Vehicles**

On March 1<sup>st</sup>, Beijing's municipal government passed a resolution to conduct nine environmental improvement programs over the next three years, including increasing energy efficiency, improving sanitation systems and public transportation, and further supporting the use of hybrid and electric vehicles, according to People's Daily.

Under the "Green Beijing Action Plan" setting goals for the end of 2012, the city plans to:

- Make 15 million square meters (161.5 million square feet) of residential and commercial space more energy-efficient. Buildings will be retrofitted with better insulation, and about 12 million energy-efficient light bulbs are expected to be installed. Beijing also hopes to have 500 hotels certified under national "Green Hotel" standards.
- Increase residential use of natural gas and to have it account for 12 percent of energy use in the city.
- Have 260 miles of subway and light rail and expand bus lanes to help increase public transportation's share of "public trips within the city center" to 42 percent.
- Have 5,000 hybrid or electric vehicles in the public transportation and government vehicle fleet. In addition, 20,000 bicycles will be available at 500 rental points.
- Establish a remote sensing network to monitor motor vehicle exhaust.
- Achieve a 38 percent forest coverage rate and a 45.5 percent "green coverage" rate, which includes parks and greenbelts.
- Have the capacity to dispose of 17,000 metric tons of solid waste per day. According to official figures, Beijing now produces about 18,000 metric tons of solid waste per day and has the capacity to dispose of 10,000 metric tons.
- Enforce a garbage sorting system for new residential areas and to create 20 sorting centers by 2020.

## **61. Experts Say China Needs Clearer Policies for Vehicle Emissions Standards**

While China is in the first phases of implementing tighter emissions standards for new models of domestically produced light- and heavy-duty vehicles, greater efforts need to be made to clarify policies and to overcome infrastructure hurdles before the new standards have an effect on vehicle emissions, said experts at the March 23–24 Diesel Emissions Conference Asia in Beijing. Euro IV emissions standards officially came into effect for new models of domestic heavy-duty vehicles in China on January 1<sup>st</sup>. Euro 4 standards for light-duty vehicles are set to take effect on July 1<sup>st</sup>.

However, a lack of clarity on diesel fuel regulations, uncertainty over access to quality low-sulfur fuels, and questions about access to diesel fuels at filling stations have slowed implementation of Euro IV standards, said Ding Yan, director of the Vehicle Emissions Control Center for the Ministry of Environmental Protection (MEP). "There are still disputes in the industry over Euro IV standards and technical requirements," Ding said.

Part of the dispute stems from the fact that the government doesn't want to be seen as favoring a specific technology, experts said.

"I don't think the government supports a certain technology over another," said Wu Xuefang, executive director of the ministry's Institute of Environmental Standards. "It will take time and cost to apply the technologies. There is a common problem with implementation."

Although Euro IV standards for heavy-duty vehicles are being implemented, auto producers are still not looking for the best available technology, said Bruno Tronchetti, CEO of Pirelli Eco Technology SpA. Tronchetti said automakers still are looking for the "cheapest" technology. He said there needs to more clarification on the laws, as well as direction about the costs versus benefits between emissions reduction technologies on new vehicles compared to retrofitted vehicles.

Li Kunsheng, executive director of the Vehicle Emissions Control Department of the Municipal Environmental Protection Bureau in Beijing, where Euro IV standards have been in place since 2008, said that Selective Catalytic Reduction (SCR) technology, which can greatly reduce emissions of nitrogen oxides, is more "favorable" for the Chinese market. But he said that owners might not adopt certain technologies, so it will be for the market to decide. Beijing will adopt Euro V emissions standards by 2012, Li said.

Chen Changhong, executive director of the Research Institute of Atmospheric Environment within Shanghai's Environmental Protection Bureau, said that Shanghai's greatest concern now is pollution from heavy-duty vehicles. "These vehicles pose ten times greater impact on human health [than other vehicles]," Chen said. He said that reducing sulfur emissions and large particulate matter less than 10 microns in size (PM-10), as well as nitrogen oxides would be a focus of the next planning document for the city. Shanghai adopted Euro IV standards at the end of 2009 and implementation of the new standard for heavy-duty vehicles is "going well," Chen said.

Ding also said the central government is currently modifying its Air Pollution Law, modeling it on the U.S. Clean Air Act. However, it will take from five to 10 years to fully implement provisions dealing with vehicle life cycles and quality control of fuels, he said.

The Standing Committee of the National People's Congress will deliberate on the Air Pollution Law late in 2010.

Ding said that the Ministry of Environmental Protection also is working on a Motor Vehicle Emissions Control Plan to be included in China's 12<sup>th</sup> Five-Year Plan. The emissions control plan is expected to be adopted by the National People's Congress in March 2011, Ding said. Subsidies for new energy vehicles and restrictions on pre-Euro, Euro I and II vehicles will be used in the future to help push implementation of higher vehicle emissions standards, Ding said.

Wu, with the environmental standards department at the ministry, said his department is working on the target standards for the emissions control plan. The standards will be based on general national targets for key emissions such as sulfur dioxide and nitrogen oxides, he said. Nitrogen oxides, in particular, will receive reduction targets in a national planning document for the first time, Wu said, adding that it still will take two to five years before the nitrogen oxide emissions standards become compulsory.

Robert Earley of the Innovation Center for Energy and Transport said it is estimated that by 2020, there will be 230 million vehicles on China's roads. If China wants to move toward more diesel fueled vehicles to control pollutant emissions there will need to be resolutions to the "serious challenges" posed by the lack of low-sulfur diesel fuels across Asia, Earley said.

Sophie Punte, executive director of the Clean Air Initiative (CAI) Asia office in the Philippines said, "There is a consensus across China about lowering sulfur content." But she said that legislation and policies are lagging behind. "If China wants to use Euro IV vehicles it needs Euro IV fuels."

Zhang Jianrong of the Research Institute of Petroleum Processing at oil-giant Sinopec, said that by July 1, 2011, diesel regulations in China will require vehicles to use fuel with a sulfur content of less than 350 parts per million, while non-auto diesel will have to use fuel with 1,000 ppm or less in sulfur content. Sinopec is ready to supply this grade of diesel, Zhang said, but that storage systems and little standardization of filling stations means it will "take time to transfer to newer auto diesel" across China.

## **62. China Sees Electric Vehicles Potential But Also Cites Technological Hurdles**

China will continue to implement policies to stimulate development of electric vehicles, but technological development of batteries and charging systems for vehicles is slowing that progress, according to a researcher from the Development Research Center of the State Council, China's top decision-making body. "Incoherence" in setting national standards for batteries, "defects" in the technological development of batteries, and "weak" direction on charging systems are hampering electric vehicle development, Wang Xiaoming said on March 23<sup>rd</sup>, the first day of the three-day Diesel Emissions Conference Asia 2010, being held in Beijing.

Wang also said different paces of development between western and eastern China have complicated development planning for the infrastructure needed for electric vehicles. These hurdles are not insurmountable and the general direction still remains favorable for electric vehicle development in China, Wang added. "We are at the same starting line as everyone else when it comes to electric vehicles," he said. "And the opportunity is there to develop our own indigenous, innovative technologies."

Driving the push for electric vehicles in China is the "urgency" to limit the country's dependency on imported oil and to reduce pollution from auto emissions, Wang said. This year will be important for moving research forward on electric vehicle battery technology, he said. The State Council has been formulating some standards for batteries but has yet to finalize them, he said. China is second only to Japan in the production of rechargeable lithium ion batteries.

Over the last three years there has been "accelerated development" of electric vehicles in China, supported by government policy such as a subsidy program, first announced in January 2009, for the purchase of electric and hybrid vehicles for public transportation and government use in 13 major cities, Wang said. The policy will be expanded to a total of 20 cities this year. The state-run CCTV reported on its website on March 8<sup>th</sup> that subsidies for the purchase of electric and hybrid vehicles by private car owners will be available in five of those cities. It is not yet known which cities will be added to the program or which five would be the first to see subsidies for private purchase of electric and hybrid vehicles, although CCTV speculated that the five would be Beijing, Shanghai, Chongqing, Changchun, and Shenzhen.

CCTV said subsidies could range between 10,000 Yuan (\$1,500) for hybrid vehicles to 60,000 Yuan (\$8,800) per vehicle for all-electric cars. Even if the subsidies are announced soon, however, it is uncertain when the subsidies would be available because of the lack of a battery-charging infrastructure in these cities, experts said. Contracts for a joint venture were recently signed by Sinopec Group and the Beijing Capital Science and Technology Corp. to develop a large-scale electric vehicle charging system for Beijing, CCTV said. An official from the Beijing Municipal Science and Technology Commission also told CCTV that options include either plug-in charging stations or a system for swapping low batteries for charged ones at service stations.

### **63. China Invests Heavily In Fertile Green Auto Ground**

Chinese automakers, unscathed by a savage global economic downturn, are ramping up efforts to get more cleaner, low-emission vehicles on the roads, counting on the green drive to propel them into the top ranks of the global auto industry. From leading Chinese auto group SAIC Motor Corp to rising star Geely Automotive Holding, indigenous players will show off a host of new green vehicles at the Beijing auto show, including some futuristic concept models.

"Green energy cars represent sort of gold mine on the horizon that all the companies hope to reach eventually," said Stephen Dyer, principal with A.T. Kearney China. "Almost all the major Chinese manufacturers have on-going development programs. Some may be more politically motivated but clearly some are very serious pursuits that are backed by large investments and substantial research teams."

Big auto groups backed by government money, such as SAIC, are likely to emerge as winners, industry analysts say, while leading private-sector players, like Warren Buffet-backed BYD, will also be a front runner as it pushes into foreign markets. But the road for low emission, alternative fuel vehicles in China is a long one. Sales of Toyota's Prius, the world's best-known green car, numbered just 300 in China last year, when it overtook the U.S. as the world's largest auto market.

"Frankly, it is still a little premature to say there is now or soon to be major customer demand for electric or hybrid cars in China or anywhere in the world," said A.T. Kearney's Dyer. "In China, there may even be a higher bar to pass. This is because the majority of consumers are first time car buyers and they tend to be more practical than the green energy car buyers in the U.S. who may have political or philosophical reasons."

Still, many companies are betting heavily on an electric and alternative fuel future, and Chinese models are expected to snatch some significant share.

SAIC, which will showcase its self-developed electric car E1 and hybrid models at the auto show, is investing 6 billion Yuan (\$879 million) in green vehicles. Its hybrid Roewe 750 saloon is scheduled for mass production later this year, followed by a plug-in version of a smaller Roewe 550 and E1 in 2012.

Another state-backed heavyweight, Beijing Automotive Industry Holding Co, unveiled its BE701 electric car in November and is building a 2.28 billion Yuan production base on the outskirts of the Chinese capital, capable of making 50,000 electric vehicles and twice as many hybrids.

"There is still a technology gap between local and foreign (firms), but this is a relatively level playing field and the Chinese are not that far behind. They have a chance to catch up," said Mervin Guo, a senior analyst with J.D. Power.



Other industry observers cited Daimler's tie with BYD as recognition of China's growing strength in this field. "The Daimler-BYD tie is different from those in the early days when local automakers tended to rely heavily on their foreign partners for technologies. They are equal partners," said Chen Liang, an analyst with Huatai Securities.

Chinese automakers, however, are still newcomers with somewhat patchy reputations for quality, and are never short of critics. "In China, they are going to develop some low cost EVs that won't have all the performance characteristics of cars we have in the Western world," said Kevin Wale, president and managing director for General Motors' China operations. "There is going to be quite a difference in the types of electric vehicles," Wale told the press. The No.1 Detroit automaker will sell its much-touted Chevy Volt plug-in hybrid in China in 2011 following its North America debut later this year.

Foreign automakers are continuing to test the waters for hybrid or electric models in China, but many are moving cautiously, given the chilly reception of some pioneering hybrid models, including Toyota's Prius, GM's Buick Lacrosse and Honda Motor's gasoline-electric Civic. A made-in-China Prius costs as much as \$41,000, nearly matching the price tag of much bigger gasoline-powered Camry, making it a turn-off for Chinese buyers, who still have a penchant for big cars.

Annual sales of imported Civic hybrids are also a few hundred, according to a Honda official, who blamed the hefty price tag of nearly \$40,000 -- roughly twice as much a China-made non-hybrid version -- and lack of government incentives. "Green cars like hybrids are expensive. Without government subsidies, the market just won't take off," said the Honda official.

Beijing pledged late last year to hand out rebates to private car buyers, expanding a pilot scheme targeting public transport operators, but no timetable has been set. Some foreign automakers are also treading cautiously to see which technologies the government endorses before making any big investments. Still, both GM and Nissan Motor are on track to import the Volt and Leaf next year, followed by BMW, which will bring its first hybrids for China -- a gasoline-electric BMW X6 and BMW 7 -- later this year.

On top of a formidable price tag, a lack of industrial standardization and inadequate infrastructure network are also cited as major obstacles for plug-in vehicles. The southern boom town of Shenzhen, where BYD rolled out its plug-in hybrid, F3DM, late last year, has just three charging stations. Moreover, the facilities, built by a major Chinese state power grid, are off-limits to other entrants like Nissan's Leaf.

"You can't charge the Leaf at the facilities as the charger just won't fit in. We'll have to have our own facilities when we sell Leaf in Shenzhen," said Tsunehiko Nakagawa, vice president of Nissan China Investment. "We are working with local governments and other Japanese carmakers right now. We want to make sure that new charging facilities to be built could be at least be shared by us all."

#### **64. China Embraces Booming Electric Car Industry at Auto Show**

A record 95 electric cars will be unveiled at the Auto China show in Beijing as foreign and domestic automakers hope to gain a foothold in the fast-emerging Chinese green-vehicle market. The show is now one of the biggest in the world, after China overtook the US in 2009 to become the world's top auto market.

Many of the world's leading car firms are expected to unveil some of their latest green-vehicle developments. For example, Toyota said earlier this month that it plans to start offering a hybrid version of its Camry sedan in China and will also display a new electric concept car at the Beijing show. Meanwhile, GM will be showing its Volt plug-in car at the show, with a view to bringing it to market in the region next year. It will also display its Cadillac Converj electric concept car and the Cadillac XTS concept car with a plug-in hybrid system. Similarly, Nissan will give a run out to its recently launched Leaf electric car, which it plans to start selling in China from 2011, and BMW will debut its new BMW 7 series hybrid sedan and X6 hybrid sport-utility vehicle.

However, it is not just the established car giants that are planning to tout their green credentials at the show. A host of increasingly influential Chinese manufacturers are also expected to tout their wares. China's biggest carmaker, SAIC Motor Corp, is expected to debut its E1 electric concept car and also present a hybrid version of the Roewe 750, which will be in mass production later this year. Meanwhile, Beijing Automotive Industry Holding Co will be showing its BE701 electric car, which was first unveiled in November. The firm is currently building a production base on the outskirts of Beijing with the capacity to produce 50,000 electric vehicles a year. It plans to become a major player in the emerging domestic market for electric vehicles.

The relative high price tag for electric cars compared to conventional petrol models and the current lack of subsidies and charging networks in China, means that none of the firms are expecting a quick payback from their investment.

The Chinese government had been scheduled to announce subsidies for alternative energy-powered vehicles in January, but according to recent reports in the China Economic Times the decision has now been delayed until July.

However, air pollution is a serious and growing problem in China and government officials said last year that they want to have more than 60,000 alternative-energy vehicles on the roads by 2012, with electric vehicle sales accounting for 15 per cent of the total market. As a result, all of the firms presenting green vehicles at the Beijing show are expecting substantial investments in charging infrastructure and generous incentives for electric vehicles to be introduced in the near future.

## **65. China Developing Standards for Low-Carbon Cities in Next Five-Year Plan**

China hopes to formulate standards for "low-carbon cities" that would combine urban planning, renewable energy, and energy-efficiency policies to reduce a city's carbon footprint, according to a leading Chinese sustainable development researcher. Researchers at the Chinese Academy of Social Sciences and the National Development and Reform Commission are developing standards for a low-carbon city by compiling indexes and methodologies they can eventually put to practical use, said Chen Hongbo, a researcher at the academy's Institute for Urban and Environmental Studies.

Standards under development include carbon productivity indexes for products produced in a city, measuring how many products can be produced per metric ton of carbon dioxide released. They also include carbon emissions per capita indexes, which measure the amount of carbon produced by people in their daily lives; and carbon resource indexes, measuring the amount of carbon produced by using fossil fuels within a city.

Concepts related to a “low-carbon economy “and “low-carbon cities” will be included in China's 12<sup>th</sup> Five-Year Plan, which will cover the 2011–2015 period, Chen said, although it is unclear how detailed they will be. It will take time for the policies to really affect carbon dioxide emissions, Chen added.

Over the past several years, China has adopted standards on the designation of Eco-Cities, Districts, and Counties, as well as Model Environmental Cities. Eco-City standards are more stringent than Model Environmental City standards. These standards, included in China's 11<sup>th</sup> Five-Year Plan (2006–2010), set goals for air pollutant emissions, like sulfur dioxide; water discharges and energy intensity.

Standards for low-carbon cities will focus largely on reducing emissions of greenhouse gases, in particular carbon dioxide, through better city planning, building standards, infrastructure improvements, and use of renewable energy.

Once the low-carbon city standards are developed, they will be used to compile urban planning options for cities. For example, the academy is studying how best to create an urban layout that would house more people closer to their offices for shorter commutes, incorporate more pedestrian walkways and bike lanes, add more subways and electric trams, and include green areas to absorb carbon dioxide.

Chen said researchers also are looking at how best to incorporate low-carbon building standards, both in the construction process and through the use of less carbon-intensive construction materials, while also creating more energy-efficient buildings through improved lighting and consumer-controlled heating and air conditioning.

The designation of low-carbon cities already is in the pilot phase, with Nanchang, capital of Jiangxi province in eastern China, the first provincial capital to be so classified by the National Development and Reform Commission. State-run Xinhua news agency reported in February that the city hopes to attract high-tech environmental companies, particularly solar companies, and has set a goal for its photovoltaic industry to produce 100 billion Yuan (\$14.6 billion) in revenue by the end of 2011.

Jilin City, in Jilin province in northeast China, also has been designated a low-carbon pilot city. The Academy of Social Sciences, the Energy Research Institute, Jilin University, and the London-based think tank Chatham House are conducting a joint research project to determine low-carbon zones within the city that Chen said could provide data for future standards.

## **66. NGO Panelists Cite Environmental Progress in China, Urge More Monitoring**

China has made improvements in monitoring and reducing its air and water pollution, and nongovernmental organizations and local governments can be catalysts for overcoming laxity in environmental laws, panelists at a Congressional-Executive Commission on China roundtable said on April 1<sup>st</sup>.

Barbara Finamore, the director at the Natural Resources Defense Council's China program, also spoke about the potential power of the information laws. Finamore praised the quick response of China's Ministry of Environmental Protection in establishing regulations for complying with the rules requiring disclosure of information about pollution and environmental quality, but she added that “only a few other government agencies in China have followed suit,” leaving much room for improvement.

She said the requirements to release environmental and emissions-related information and to respond to public requests for information are “quite progressive” and came as a “surprise” for those who had been working with China over extended periods of time. “Information is at a premium in China, to say the least, but of course the key is always how far these regulations are being implemented,” she said.

While different local governments have different levels of compliance, the fact that the data are now available is driving governments to improve as they see what is possible and where there is room for improvement as compared to other local governments. NGOs, she said, could be instrumental in gaining that information and using it to promote or force environmental improvements.

A recent lawsuit from an NGO that is closely regulated by the Chinese government could pave the way for other, more independent organizations to sue on behalf of the public as a whole rather than on behalf of individuals, Finamore said. “The potential if this is continued and expanded for improving enforcement and environmental information ... cannot be overstated,” she said.

Deborah Seligsohn, a senior adviser for the World Resources Institute's China Climate and Energy Program, said China has the capacity to measure greenhouse gas emissions on a national level, but it still needs much improvement on more local levels.

The national level measurements, she said, should be sufficient to measure China's compliance with the Copenhagen Accord on reducing greenhouse gas emissions reached at the December climate summit in Copenhagen. “China's national data are already good enough to evaluate its commitments,” she said. On a provincial level, required emissions monitoring of sulfur dioxide from power plants has laid the foundation for expanding emissions monitoring to other gases, including carbon dioxide, she said.

Finamore said environmental improvements will continue, particularly with the implementation of a program in which the central, national Chinese government rates local and provincial leaders “in which provincial governors and other leaders are rated not just by how well they grow their GDP but by how well they meet the SO<sub>2</sub> [sulfur dioxide] ... and the energy intensity targets.” Those ratings can determine the path of a politician's entire career and have had a strong impact on improving emissions monitoring and reductions, she said.

## **67. Indian Cities Tighten Vehicle Emissions Standards**

Stricter emissions standards for new vehicles went into effect on April 1<sup>st</sup> in 13 Indian cities. The standards, known as Bharat Stage IV, require the sale of less-polluting vehicles and higher-grade petrol and diesel, which emit lesser amounts of pollutants such as sulfur, benzene, nitrous gases, carbon monoxide, and particulate matter. Affected cities are Delhi, Mumbai, Kolkata, Chennai, Hyderabad, Bangalore, Lucknow, Kanpur, Agra, Surat, Ahmedabad, Pune, and Sholapur. The rest of the country will switch from Bharat Stage II to Bharat Stage III emissions standards in coming months as oil companies ramp up production and supply of upgraded fuel. Provision of Bharat Stage III-compliant petrol and diesel will be phased in by region between June 1<sup>st</sup> and October 1<sup>st</sup>, India's Ministry of Petroleum and Natural Gas said. The government rejected automakers' argument that the switch should be made uniformly across the country because varied fuels could damage vehicles. In setting the phase-in

schedule, the government gave greater weight to oil companies' concerns over production and supply of new fuels.

### **68. HPCL Upgrading Its Refineries in India**

Hindustan Petroleum Corp. Ltd. (HPCL) is upgrading its two refineries in India to meet Euro 4 emissions standards for high-speed diesel and gasoline. HPCL recently let two engineering, procurement, construction, and commissioning contracts to Technip for diesel desulfurization at its 164,000-b/d Visakh refinery in Andhra Pradesh on India's east coast.

Under one contract, Technip will provide a 2.2-million ton/year diesel hydrotreater. The other contract is for a 36,000 tpy hydrogen generation unit.

Among other work at Visakh, HPCL is adding a single-point mooring unit able to handle very large crude carriers, which can't now reach the refinery because of draft restrictions. It also has reported plans for a delayed coking unit.

At its 132,000-b/d Mumbai refinery, HPCL is installing a 2.2-million tpy diesel hydrotreater and a 20,000-tpy hydrogen generation unit as well as a 1.4-million tpy FCCU, which will join a 1-million tpy FCCU in place.

Also at the Mumbai refinery, HPCL is studying feasibility of adding a solvent deasphalting unit.

### **69. Clean Fund Helps Reduce HCMC Traffic Pollution with US\$225 Mil**



The Clean Technology Fund (CTF) has granted Ho Chi Minh City US\$25,000,000 to reduce traffic pollution, the HCMC Steering Committee for Climate Change Mitigation and Adaptation said on April 22<sup>nd</sup>. The steering committee said that it would use the funds soon for projects to expand public transportation and limit using personal vehicle use in the city.

Traffic jams like these are commonplace in HCMC. (Photo: SGGP)

According to the HCMC Environment Protection Agency, 89 percent of the results obtained at six air quality observation stations in the city showed that the air quality tested was below standards, with dust pollution as the most severe problems. Poor infrastructure, traffic jams and the concentration of trucks at these areas had led to the high levels of pollution, analysts said.

HCMC is now home to four million motorcycles and one million cars.

### **70. Taiwan Launches 6 Year Effort to Build \$3.8 Billion Electric Vehicle Industry**

The Taiwanese government plans to invest 9.7 billion Taiwan new dollars (\$307 million) in the next six years to develop an electric vehicle manufacturing industry worth TWD 120 billion (\$3.8 billion) in 2016. On April 15<sup>th</sup>, the Cabinet approved a six-year strategic plan and action programs to promote the adoption of electric vehicles as proposed by the Ministry of Economic Affairs.

According to Premier Wu Den-yih, Taiwan's information and communications technology abilities, growing auto parts industry, and geographical conditions are all suitable for electric cars. "If we take advantage of these conditions, Taiwan's electric vehicle manufacturing industry will not only help local carbon reduction but also seize the international market," Wu said at the Cabinet's weekly meeting.

The government said TWD 6.9 billion (\$218.7 million) will be spent in the next six years to help whole-car and auto parts suppliers, marketers, and others. Officials said that in 2016 Taiwan might be able to sell 45,000 electric cars in the local market and export 15,000 cars to overseas markets, including China.

In the first phase, TWD 2.2 billion (\$69.7 million) will be invested from 2011 to 2013 to promote the adoption of 3,000 electric vehicles in 10 designated cities and counties. Incentives will include exemptions from the commodity tax for electric car manufacturers and from the license tax for drivers of the vehicles. The government guarantees to purchase at least 185 electric cars during the three years. Charging stations will be built.

"We will launch 10 programs to promote the adoption of 3,000 electric cars and the government's financial assistance accounts for only 30 percent of the whole expenditure," Vice Minister of Economic Affairs Jung-chiou Hwang told reporters on April 15<sup>th</sup>, implying that the project has gained private-sector support.

The government also will promote the adoption of electric scooters. According to the ministry, the commodity tax on electric scooter manufacturers will be halved from 2011 to 2013 and each buyer will be given from TWD 8,000 to TWD 11,000 (\$254 to \$350) as incentives. At the end of 2009, there were 12,000 electric scooters on Taiwan's roads. The ministry expects that number to grow to 160,000 in 2012.

The Taiwanese government also is implementing a plan to install smart electrical meters for half of all users on the island, roughly 6 million households, in an attempt to reduce energy use and greenhouse gas emissions.

## **71. Indonesian Firm Faces New Forest Clearing Allegation**

Greenpeace has released new satellite images it said linked Indonesian oil palm producer Sinar Mas to the clearing of high value rainforest, a practice the firm had vowed to stop. Several top palm oil buyers, including Unilever and Nestle have said they will stop buying from Sinar Mas after Greenpeace released a report alleging rainforests and peatlands had been cleared to make way for its plantations.

Rainforests and peatlands trap enormous amounts of greenhouse gases and their preservation is seen as an important step in slowing climate change.

Sinar Mas, which owns Jakarta-listed PT SMART Tbk and Singapore-listed Golden Agri-Resources issued a statement in February promising it would not convert high conservation

forests or develop plantations on peat soils. However, Greenpeace said in a statement it had satellite images showing continued forest clearing in a concession operated by PT Agro Lestari Mandiri (PT ALM), which is managed by PT SMART Tbk. The concession is in Ketapang district, West Kalimantan, on the Indonesian half of Borneo Island.

"Greenpeace has new evidence from the field, showing that Sinar Mas continued to clear peatlands and orangutan habitat in its PT ALM concession, despite its commitment to stop," Greenpeace said in a statement. Greenpeace said in the statement that a comparison of satellite images from February 23<sup>rd</sup> this year and November 19<sup>th</sup> last year showed peat land and forest clearance had continued, and that about 2,300 hectares (5,683 acres) had been cleared by PT ALM.

PT SMART Tbk President Director Daud Dharsono said in a statement that the new allegations would be examined as part of a broader investigation by two certifiers, Control Union Certification and BSI Group. "We would like to reaffirm that we remain committed to achieving environmentally sustainable production of palm oil," he said in the statement.

Palm oil is used in confectionary, cooking oils, soaps, cosmetics and as a biofuel for transport.

Industry officials have said that demand for Indonesian palm oil remains strong, despite the Greenpeace campaign.

Agribusiness giant Cargill said in March that it would stop using Sinar Mas as a supplier if the Greenpeace allegations of improper land conversion were validated by an investigation by the Roundtable on Sustainable Palm Oil, an industry body of planters, consumers and green groups.

## **SOUTH AMERICA**

### **72. Chilean Council Approves Proposed Bill to Limit Breathable Particulate Matter**

On March 9<sup>th</sup>, the Council of Ministers of Chile's National Environment Commission approved proposed legislation regulating levels of breathable particulate matter in the air. In line with a policy proposal published in August 2009, the bill would establish increasingly stringent maximum levels for particulate matter measuring 2.5 microns in diameter or smaller (PM<sub>2.5</sub>) over the next two decades.

The bill needs the approval of Congress before becoming law. The decision on whether to submit it to Congress will lie with the government of President Sebastián Piñera, who took office on March 11<sup>th</sup>.

Under the legislation, levels of PM<sub>2.5</sub> would have to annually average 25 micrograms per cubic meter (µg/m<sup>3</sup>) or less by 2012, 20 µg/m<sup>3</sup> or less by 2022, and 10 µg/m<sup>3</sup> or less by 2032.

Environment Minister Ana Lya Uriarte said in a written statement, "This gradual approach will allow both public policy and investment to be adjusted accordingly and give clear, early signals to investments from the private sector, in order to effectively fulfill the commitment of all sectors to achieve compliance with the limits established in the norm."

A study ordered by the government in 2009 estimated the cost of complying with the norm at \$5 billion, a figure that would be offset by savings of \$33.5 billion in additional health spending and the avoidance of 148,000 deaths through 2040.

Levels of PM<sub>2.5</sub> average 32 µg/m<sup>3</sup> in the greater Santiago metropolitan region, which suffers from serious air pollution. The breathable particulate matter is emitted by industry, transportation, and household activity, especially the burning of firewood for heating and cooking.

The minister said PM<sub>2.5</sub> is the most harmful form of particulate matter and has been linked to increased risk of heart attack, inflammation of the lungs, the development of atherosclerosis, and worsening symptoms of asthma.

### **73. Argentina Cuts Import Duties for Green Vehicles**

Argentina has cut import duties from 35 percent to 2 percent for environmentally friendly vehicles, including electric and hybrid cars and minibuses, made outside the regional trading bloc Mercosur. The decision, taken through Decree 311/2010 published March 5<sup>th</sup> in the official gazette, covers only 200 individual vehicles from automakers with headquarters outside the group formed by Argentina, Brazil, Paraguay, and Uruguay. Automakers must also have a production plant in Argentina to qualify. The only green vehicle currently being imported and promoted in Argentina is the Toyota Prius, which would qualify for the tariff cut because Toyota does have a production facility in the country. Besides electric and hybrid cars, authorities also will consider vehicles running on other types of alternative energies, the decree said. "Our country must join the worldwide trend aimed at favoring the use of clean technologies that allow for the sustainable development of our society," the decree said. It added that the move would help to familiarize consumers with these types of vehicles with a view of eventually seeking their mass production in Argentina. Argentina is expected to produce some 700,000 vehicles this year, about half of them for export.

### **74. Chile Puts Stricter Limits on Transportation, Industry to Clean Capital's Air**

On April 16<sup>th</sup>, the Chilean government published an updated version of its Decontamination Plan to clean up Santiago's polluted air. The plan, which appeared in the country's official gazette, *Diario Oficial*, includes stricter standards for fuels, new emissions standards for light vehicles and motorcycles, more inspections of catalytic converters, obligatory particle filters on buses, and targets for industry to reduce emissions of particulate material, sulfur dioxide, and nitrogen dioxide, among other measures.

Presenting the air quality plan earlier in April, Environment Minister Maria Ignacia Benitez said the government is preparing legislation to send to Congress that would set limits on breathable particles. This is the only portion of the plan that requires congressional approval. The measures "will allow fulfillment of the PM-2.5 standard, which is its final stage of preparation," the minister said, noting that the fine material represents a serious public health threat.

The plan requires diesel and gasoline sold in the Santiago Metropolitan Region starting in 2011 to contain less than 15 parts per million of sulfur, compared to 50 ppm currently. The government also will issue a decree lowering the maximum sulfur content of paraffin, widely used for domestic heating, from 500 parts per million to 100 ppm starting April 2012.

By Sept. 1, 2012, all buses in the Transantiago public transport system must have particle filters installed. Together with plans to retire the oldest vehicles, this will help make Transantiago the cleanest public transport system in Latin America, the minister said.



The government also will impose stricter emissions standards on new light vehicles and motorcycles as of Sept. 1, 2011, and will introduce incentives for the purchase of low- or zero-emission vehicles.

By the end of 2010, major emitters must cut emissions of nitrogen dioxide and particulate matter to half of 1997 levels and must reduce emissions of sulfur dioxide to the equivalent as if they were burning natural gas. Chilean industry was forced to switch to dirtier-burning fuels when neighboring Argentina in 2004 started to sharply cut exports of natural gas, aggravating air pollution in Santiago.

The government also plans to introduce a limit for particle emissions from new wood stoves.

The minister said the plan also will involve the creation of 1,800 hectares (4,448 acres) of green areas, 690 kilometers (429 miles) of cycle paths, and a project to clear dust from the capital's streets. The Ministry of Agriculture will implement a plan to minimize stubble-burning by farmers in the Santiago area.

Despite the breadth of measures contemplated, environmentalists have said the plan fails to tackle the structural factors behind Santiago's air pollution: the physical expansion of the city, its growing population, and the rapid rise in the number of vehicles. "These have risen significantly in recent years without any control or planning on the part of the authorities," said Paola Vasconi of Fundacion Terram.

#### **75. Chile Extends Comment Period on Standards for Power Plants**

Chile's National Environmental Commission (CONAMA) has granted an additional period for public consultation on proposed legislation to regulate pollutant emissions from the country's fossil fuel-powered electric plants. According to resolution No. 277, published March 23<sup>rd</sup> in Chile's daily gazette Diario Oficial, the closing date for individuals and organizations to comment on the standards will be extended from March 11<sup>th</sup> to April 7<sup>th</sup>. The later date allows more time for public comment in the wake of the devastating earthquake that struck the country on February 27<sup>th</sup>, CONAMA said.

The proposed standard would set limits for power plant emissions of nitrogen dioxide, sulfur dioxide, and particulate matter, as well as metals like mercury, nickel, and vanadium. CONAMA's Council of Ministers approved the proposal on December 7<sup>th</sup>, 2009.

Chile's fossil fuel-powered electricity capacity is set to double between 2008 and 2012. Most of the new power plants will run on coal, following the loss of cleaner-burning natural gas supplies from neighboring Argentina.

CONAMA said the decision is in line with "the obligation of public institutions to take the necessary measures to ensure full respect for the principle of public participation and equality of interested parties."

#### **76. Further Delays Seen For Brazil's Abreu E Lima Refinery**

The start-up of Brazil's planned 230,000-b/d Abreu e Lima refinery, now under construction in Pernambuco state, has been delayed by another 7 months, according to an executive of state-owned Petroleo Brasileiro SA (Petrobras). Paulo Roberto Costa, Petrobras downstream director,

said the launch had been set back to November 2012 from April 2012 as the state-run firm had to repeat some processes to negotiate better prices for some of the refinery's systems.

Petrobras is developing the \$12 billion refinery under a joint venture agreement with Venezuela's state-owned Petroleos de Venezuela SA. Under the JV agreement, Petrobras holds a 60% stake, while PDVSA holds 40%.

Costa also noted that PDVSA has not yet paid the more than \$400 million it owes as a first payment for its stake in the refinery. Costa was repeating remarks he made in March, when he said Petrobras had received no official word from PDVSA about its payment of \$490 million for the refinery.

According to Brazilian state media, the \$490 million refers only to the audited part PDVSA had to pay for costs to August 2009. In addition, PDVSA is expected to cover 40% of a \$5.039 billion loan that Petrobras took out with the Brazilian Development Bank for the refinery.

"The contract hasn't even been signed yet," said Costa in March. "All of the contracts have been read through and there is no further discussion about a single technical aspect." At the time, he also said, "Petrobras was taking care of business by itself and there has been no delay."

Last December, Petrobras signed five contracts, valued at \$5.165 billion, for the Abreu e Lima refinery. The signing of the contracts coincided with a statement by Costa that the refinery would cost 23 billion reais—more than triple its previous estimate. At the time, Costa also said the expected start-up date had been delayed to April 2012 from March 2011.

## **MIDDLE EAST**

### **77. Egypt Using CNG Taxis, Revised Auto Regulations to Cut Air Pollution**

An effort to take old vehicles off the road and to switch to natural-gas-powered taxis is paying off in improved air quality, an Egyptian Environment Ministry spokesman said March 31<sup>st</sup>. A report published by the ministry on March 24<sup>th</sup> said that Cairo is more than 100 times more polluted than New York City. This explains why it is important to "curtail this spiraling pollution that threatens our health and our environment" said Ministry spokesman Ossama Diab in a March 31<sup>st</sup> interview. "There are too many pollutants being thrown into Egypt's air and it is causing massive health problems, including lung cancer and asthma," Diab said.

Although he warned that "enforcing these initiatives and regulations could be difficult as people often pay bribes to avoid facing penalties," he said they have already achieved some success. For example, he said the ministry has been documenting concentrations of airborne particles in Cairo. In January 2009, there were nearly 3,000 parts per million in some areas. "Today, however, we have seen this number drop to 2,000 and we believe it is the new laws that have really done well in curtailing this," he said. Levels of airborne particulates in New York are currently about 60 parts per million, according to Diab.

One such law is the Road Regulations Bill, which Parliament approved in September 2008 but which did not go into full effect until January 2010. It aims to sideline old cars and make city taxis more environmentally friendly. Many older, more polluting vehicles in Egypt have been held together by drivers' ingenuity and mechanical skills. Egypt's Parliamentary Committee on Environmental Regulations—in consortium with the ministry—said in a statement that licenses are not being renewed for vehicles that are more than 25 years old or that get less than 10

kilometers per liter (23.5 miles per gallon). Sameh Yussef, an adviser to Parliament Speaker Fathi Surour, said this will ensure that “we don't have unnecessary pollution going into the atmosphere in terms of emissions and particles.”

Under the bill, the government is also offering subsidies for the purchase of new vehicles for those who cannot afford them. Egypt's traditional black-and-white taxis run on gasoline and typically have had poor upkeep, leading to worsening pollution, Diab said. The government is offering loans for drivers to purchase new natural-gas-powered taxis, which are white, and is installing a natural gas container in the trunk free of charge, Diab said.

Egypt began implementing the taxi program in March 2009 but only in the past six months has it picked up steam, with hundreds of new white taxis taking to the road.

“Egypt is a large producer of natural gas and it only makes sense to employ it,” Diab said. “And natural gas does not leave as large an environmental imprint on society and the air. Already we are seeing the results in the number of particles in the air.”

Maher Mahmoud of the country's statistics bureau, CAPMAS, said March 30 that many Egyptians do not understand the causes of air pollution but do comprehend the health problems related to it. “This is why so many people are beginning to turn in their cars and get new ones,” Mahmoud said.

With newer and fewer cars on the road, pollution will drop, Mahmoud said. “If we can continue to promote these better uses of technology, remove cars that shouldn't be on the roads, and get people to understand the effects air pollution has on their health, it should be a great thing,” Mahmoud said.

He added that reduced pollution would make Egypt more attractive to international businesses and governments. Jason Terry, a former official at the Australian Embassy, said that embassy requires personnel to leave Cairo at least twice a month to prevent pollution-related illness.

## **CLIMATE**

### **78. South Africa, India, Indonesia Seek Top UN Climate Job**

South Africa, India and Indonesia are vying to win the U.N.'s top climate change job, a key post to build trust between poor and rich in 2010 after the U.N.'s Copenhagen summit which set few binding targets. Many analysts expect a developing nation candidate will succeed Yvo de Boer, a Dutch citizen who said last month he would step down as head of the U.N. Climate Change Secretariat on July 1 after a grueling four years.

"It is good news for the whole process that it is attracting strong candidates from developing countries," said Mark Kenber, International Policy Director at the Climate Group in London.

South Africa has formally nominated Tourism Minister Marthinus van Schalkwyk, 50, and a former environment minister, for the job. It said some governments, business institutions and non-governmental organizations had expressed support.

India recently nominated Vijay Sharma, a senior environmental official, to succeed de Boer.

Indonesia, which hosted U.N. talks in 2007 that launched talks on a new climate treaty, has expressed interest but not yet settled on a nominee. It is unclear which other nations may be interested.

Agus Purnomo, Indonesia's lead negotiator in Copenhagen said there were rumors he might be nominated. "If I had a choice I would stay in Indonesia but if this was given to me as an official assignment I would be interested," he told the press.

The Jakarta Post has also mentioned possible candidates including former Foreign Minister Hassan Wirajuda.

December's Copenhagen summit fell short of a legally binding treaty, largely because of disagreements between developed and developing nations about sharing the burden of emissions curbs.

"Whoever is chosen as de Boer's successor will above all need to be able to build trust between major industrialized and developing economies," Kenber said. De Boer has suggested his replacement should be from a developing nation.

The choice is up to U.N. Secretary-General Ban Ki-moon, who says stronger action by all, mainly to curb emissions from burning fossil fuels, is needed to avert more heat waves, droughts, floods and rising sea levels.

Delegates from 194 nations will meet in Bonn, Germany, next month to try to prepare the next major talks, in Mexico from November 29 to December 10. Few expect a full-blown treaty this year and South Africa will host the talks in 2011.

As environment minister, van Schalkwyk criticized former U.S. President George W. Bush. "We are looking forward to whoever succeeds the present (U.S.) administration, because we believe we can probably only do better," he said in 2008.

South Africa's climate policies are among the most ambitious of developing nations -- envisaging a peak in emissions by 2020-25. Most developing nations merely aim to slow the rise of emissions, without yet setting a firm peak.

India, for instance, has promised to cut the amount of carbon emitted per unit of economic output by 20-25 percent by 2020. And Indonesia aims to cut emissions by at least 26 percent by 2020 below a "business as usual" rise.

## **79. CO2 at New Highs Despite Economic Slowdown**

Levels of the main greenhouse gas in the atmosphere have risen to new highs in 2010 despite an economic slowdown in many nations that braked industrial output, recent data showed. Carbon dioxide, measured at Norway's Zeppelin station on the Arctic Svalbard archipelago, rose to a median 393.71 parts per million of the atmosphere in the first two weeks of March from 393.17 in the same period of 2009, extending years of gains.

"Looking back at the data we have from Zeppelin since the end of the 1980s it seems like the increase is accelerating" Johan Stroem, of the Norwegian Polar Institute, said of the data compiled with Stockholm University.

The rise in concentrations, close to an annual peak before carbon-absorbing plants start to grow in the northern hemisphere spring, was below the average gain over the year of around 2 parts per million.

"It still confirms the rise," Stroem said of the data from the first two weeks of March supplied to the press. Concentrations vary from week to week depending on the source of Arctic winds.

Carbon concentrations have risen by more than a third since the Industrial Revolution ushered in wider use of fossil fuels. A 2009 study of the ocean off Africa indicated carbon levels in the atmosphere were at their highest in 2.1 million years.

Recession in 2009 in many nations has not apparently affected gains. The International Energy Agency estimated in September that emissions of carbon dioxide would fall about 2.6 percent in 2009 because of a decline in industrial activity.

Concentrations can keep rising since each carbon molecule emitted typically lingers in the atmosphere for many years. The U.N. panel of climate scientists says the rise will cause more floods, mudslides, heat waves, sandstorms and rising sea levels.

The data "seem to show that we continue to emit as if there was no tomorrow," Kim Holmen, director of research at the Norwegian Polar Institute, said of the carbon readings.

The build-up of carbon dioxide, also recorded since the late 1950s in measurements from a Hawaiian mountaintop, is one of the strongest elements of climate scientists' case that mankind is to blame for global warming.

Skeptics have cast doubt on the science since leaks of e-mails from a British university last year appeared to show that some climate researchers are intolerant of alternative views. The U.N. panel of climate scientists, itself under fire for errors including an exaggeration of the pace at which Himalayan glaciers are melting, says it is more than 90 percent sure that human activities are causing global warming.

Carbon concentrations at Svalbard peak in April after rotting plants release the gas through the winter -- land areas in the northern hemisphere are far bigger than in the south. Levels decline when plant growth resumes in the northern spring.

Stroem said there were signs that the rise in concentrations in late winter was becoming bigger than in late summer. He speculated that could be a side-effect of global warming. A gradual shrinking of ice and snow cover in the Arctic summer, he said, might mean more plants were able to grow and so absorb carbon, masking the rise in atmospheric carbon. The death of some of the extra vegetation in winter added to emissions.

### **80. Huge Methane Leak in Arctic Ocean: Study**

Methane is leaking into the atmosphere from unstable permafrost in the Arctic Ocean faster than scientists had thought and could worsen global warming, according to a new study.

From 2003 to 2008, an international research team led by University of Alaska-Fairbanks scientists Natalia Shakhova and Igor Semiletov surveyed the waters of the East Siberian Arctic Shelf, which covers more than 772,200 square miles (two million square kilometers) of seafloor in the Arctic Ocean.

"This discovery reveals a large but overlooked source of methane gas escaping from permafrost underwater, rather than on land," the study said. "More widespread emissions could have dramatic effects on global warming in the future." Earlier studies in Siberia had focused on methane escaping from thawing permafrost on land. Scientists have long thought that the permafrost under the East Siberian Arctic Shelf acted as an impermeable barrier that sealed in methane, a powerful greenhouse gas 30 times more potent than carbon dioxide.

But the research team's observations showed that the permafrost submerged on the shelf is perforated and leaking large amounts of methane into the atmosphere. More than 80 percent of the deep water and more than half of surface water had methane levels around eight times higher than found in normal seawater, according to the study published in the journal *Science*. The researchers warned that the release of even a fraction of the methane stored in the shelf could trigger abrupt climate warming.

Current average methane concentrations in the Arctic average about 1.85 parts per million, the highest in 400,000 years, said Shakhova. Concentrations above the East Siberian Arctic Shelf are even higher, and scientists are concerned because the undersea permafrost "has been showing signs of destabilization already," she added.

Geological records indicate that atmospheric methane concentrations have varied between about .3 to .4 parts per million during cold periods to .6 to .7 parts per million during warm periods.

### **81. Fine Particles Trap More Heat in Atmosphere Than Previously Thought**

Fine particles in the air produced by road transport trap more radiation in the earth's atmosphere than previously estimated, and therefore may contribute more to global warming than realized, according to new research.<sup>3</sup> In contrast, the impact of particles from shipping appears to reflect more radiation than previously thought, whilst the effect of particles from aviation is comparatively small.

Aerosols are fine particles suspended in the air. Transportation emits aerosols of black carbon, organic carbon and sulfates which influence the amount of heat radiation that enters or leaves the atmosphere, otherwise known as radiative forcing. Black carbon tends to absorb the heat and keep it within the atmosphere, whilst sulfates tend to scatter the heat so that it leaves the atmosphere. As transportation is predicted to grow significantly in the next few decades, it is important to understand the effects of aerosols on radiative forcing.

Research funded through the EU QUANTIFY project<sup>4</sup> estimated the range of radiative forcing from the main transport aerosols of black carbon, organic carbon and sulfates for the whole transportation sector. It also investigated whether the mixing of different aerosols in the atmosphere would cause a change in properties.

When the effects of aerosols were totaled, all models indicated a 'positive' average radiative forcing for road transport, i.e. the overall impact of particles from road transport is to trap more

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<sup>3</sup> Source: Balkanski, Y., Myrhe, G., Gauss, M. et al. (2010). Direct radiative effect of aerosols emitted by transport: from road, shipping and aviation. *Atmospheric Chemistry and Physics Discussions*. 10: 1659-1691.

<sup>4</sup> QUANTIFY was supported by the European Commission under the Sixth Framework Program under the theme 'Sustainable development, global change and ecosystems'. See: [www.pa.op.dlr.de/quantify/](http://www.pa.op.dlr.de/quantify/)

heat than they reflect, contributing a warming effect to the atmosphere. Particles from shipping on the other hand have a 'negative' average forcing, i.e. they reflect more heat than they absorb and contribute an overall cooling effect. The emissions from aviation were much smaller and so their contribution to radiative forcing was small compared with other forms of transport.

Out of the three aerosols, black carbon contributed the most to radiative forcing produced by road transport. When black carbon mixes chemically with other aerosols the radiative forcing for the total aerosols ranges from 24.6 to 41.4 milliWatts per m<sup>2</sup> (the variation depends on the method of calculation). Whereas when the particles are assumed to retain their chemical properties the radiative forcing for total aerosols is nearly halved and ranges from 14.1 to 27.8 milliWatts per m<sup>2</sup>. The estimates for radiative forcing from road transport estimated in this study are much larger than previous predictions (3 +/- 11 milliWatt per m<sup>2</sup>).

For shipping the radiative forcing from all aerosols is negative. Shipping emissions contain large amounts of sulfates which have a strong negative effect, whilst the small contributions from organic carbon and black carbon tend to compensate for each other. The figures are hardly affected by assumptions about the mixing of aerosols and range from -29.7 to -22.5 milliWatts per m<sup>2</sup>. These estimates compare well with other studies.

The total radiative forcing for aviation is much smaller compared with the other two forms of transport. As sulfates and black carbon have opposite contributions, emissions of these aerosols cancel each other out. Assumptions about mixing have little impact: if the chemical properties of aerosols remain separate the radiative forcing is 0.1 to -1.1 milliWatts per m<sup>2</sup> and if aerosols mix so that their properties change then forcing is 0.3 to -1.0 milliWatts per m<sup>2</sup>.

## **82. Ships Can Cut CO<sub>2</sub> by Slowing Down: Study**

Merchant ships can cut their carbon emissions by as much as 30 percent over the next three years by traveling more slowly, according to a Brussels-based environmental group. The shipping sector accounts for nearly 3 percent of global carbon dioxide (CO<sub>2</sub>) emissions and pressure has grown for cuts. A study commissioned by Seas at Risk found that by slow steaming, vessels can reduce their fuel consumption and cut CO<sub>2</sub>.

The study, conducted by Dutch consultancy group CE Delft, showed current oversupply in the shipping industry provided opportunities for ships to slow down.

"From 2010 through 2012, emission reductions in the order of 30 percent are maximally achievable without the need for retrofitting slow-steaming equipment," the study said. Seas at Risk said the study evaluated tankers, container ships and bulk carriers. "The emission reductions are most pronounced in the case of bulk carriers circa 40 percent," it said.

Seas at Risk said the sector has had to deal with oversupply and a global economic downturn, which has hit shipping hard.

"There are several ways in which the industry can deal with the oversupply of ships. One is to decrease the amount of cargo carried per ship, another is to idle ships, and a third is to sail at lower speeds," it said. "The latter option has the advantage that fuel is saved and emissions are reduced."

The study was presented at a meeting of United Nations shipping agency the International Maritime Organization (IMO), which will examine measures aimed at cutting CO<sub>2</sub>.

"The industry has to some extent already started slow steaming, but the potential for GHG (greenhouse gas) emission reductions is huge," John Maggs, policy advisor with Seas At Risk, said. "The development of measures to encourage and facilitate the shift should be a priority for the IMO."

### **83. IMO to Set Up Expert Group on Shipping Emissions**

The International Maritime Organization's (IMO) environment policy decision-making body has agreed to set up an expert group that will assess the feasibility of market-based measures for reducing ship's greenhouse gas emissions. The expert group will make recommendations at the next meeting of the marine environment protection committee (MEPC) in September. However, this does not constitute a step towards a definite policy quite yet. The IMO is free to accept or reject the group's recommendations, a spokesperson said.

The MEPC recently met in London. Germany requested an impact assessment for an emissions trading scheme with particular emphasis on developing countries. The US said it will provide further details of its own proposals, which amount to an energy efficiency index with a possible cap-and-trade scheme at a later date.

Another working group is looking at options to improve ships' energy efficiency. The committee prepared a draft text on mandatory requirements for an energy efficiency index for new ships and an energy efficiency management plan for all ships. Some issues relating to the index still need to be finalized, the IMO said.

For example, the baselines and reduction rates on which the energy efficiency index would be based have yet to be agreed. Guidelines for calculating the baselines have been developed, using data from existing ships in the Lloyd's Register Fairplay database.

This month, Dutch consultancy CE Delft released a report showing that an international cap-and-trade scheme for the shipping sector is feasible. Crucially, unlike mandatory efficiency standards, it would provide environmental certainty over emission reductions.

The European Commission has begun to devise a plan B for cutting shipping emissions if an international agreement is not reached by the end of 2011. The governing body of the IMO is expected to reach a decision on possible international measures by then.

### **84. China, Germany Lead the Race Toward A Low-Carbon Economy**

As countries around the world set emissions targets and ramp up their national climate policies, the race toward a vibrant low-carbon economy is under way, and there is a growing consensus that the United States will not take the lead.

A report from Deutsche Bank Group's Climate Change Advisors found that when considering all of the world's major emissions and climate change policies as a measure of movement toward a low-carbon economy, China and Germany are extremely well positioned. The U.S., meanwhile, lags far behind.

"The countries that move first to a low-carbon economy are definitely going to have a head start in terms of relative growth rates," said J. Scott Holladay, an economics fellow at New York University School of Law's Institute for Policy Integrity. "In the not-too-distant future there is



going to be a huge market for green energy, and it feels like the Scandinavian countries and Germany are leading that charge, and China is quickly catching up. In the U.S., it doesn't seem to be a huge policy priority."

The Deutsche Bank report identified 154 new policy initiatives announced in countries around the world since October, clearly representing the run-up and then follow-up to the Copenhagen climate summit in December. The new emissions pledges would result in a reduction of annual emissions of about 2.8 gigatons. Add that to all the emissions policies already in place, and, if implemented successfully, they could reduce emissions by 9 gigatons in 2020. That would still fall 3 to 5 gigatons short of the goal of the "stabilization pathway" — the total needed to keep CO<sub>2</sub> levels below 450 parts per million and the global temperature rise less than 2 degrees Celsius.

Notably, the biggest contributors to the additional 2.8 gigatons of emission reductions since October are China and Brazil.

China set a target for emissions intensity reduction, which is a measure of greenhouse gases released per unit of GDP, of 40 to 45 percent below 2005 levels by 2020. Brazil set a hard emissions target of about 20 percent below 2005 levels by 2020. Each would result in almost a gigaton of emissions reduction on its own.

"Based on that, you can assume that there will be a market response," said Kate Brash, assistant director of the Columbia Climate Center at Columbia University and part of the modeling team that contributed to the Deutsche Bank report. "The ambition is clearly not particularly high."

Germany already leads the pack in many ways, having long ago established feed-in tariffs that reward consumers for producing renewable electricity and feeding their excess power into the grid; the Deutsche Bank report calls feed-in tariffs "an integral underpinning of any prosperous green economy."

China, meanwhile, has installed renewable energy capacity per unit of GDP that exceeds both Germany and the United States. As Holladay points out, though, this may position the country well economically, but it does not imply much about its environmental and global warming mitigation potential. "The rubber meets the road when you look at emissions per GDP data," he said. "The renewables are a step in the right direction, but when you look at the emissions per person or emissions per GDP data, I think the U.S. and China are both kind of lagging."

Purely economically, though, the world's most populous country is embracing a green revolution. According to another report on low-carbon transitions by the Center for American Progress, clean energy will be a \$2.3 trillion industry by 2020, and China will be right in the middle of it. China, along with Germany and Spain, has multiple national policies that position it well for the next decade. All three countries have something resembling a government-run "green bank." The China Energy Conservation Investment Corporation will have about \$15 billion in assets by 2012, consisting of energy efficiency and renewable energy technologies, among other things.

"Each of these countries has a long-term, sustained plan of how to ramp up clean energy industries and also lower carbon emissions," said Kate Gordon, one of the CAP report's authors and the organization's vice president for energy policy. "And the U.S. has 100 percent short-term and state-by-state policies. They're not comprehensive; they're scattershot."

Comparing the U.S. to these countries in any number of environmental or economic measures shows the widening divide. Germany, China and Spain all have feed-in tariff programs, while in the U.S., only a small handful of states have even experimented with the idea. All three countries also have national renewable energy standards, energy efficiency plans and carbon emission reduction plans. The U.S. has none of these on the federal level.

Holladay thinks that the United States' slow start won't necessarily keep it down forever. "I wouldn't say it spells economic doom for the United States," he said. "Energy is a significant fraction of our economy, but so much of the U.S. economy is service-based now that you could imagine us continuing to do relatively well in terms of growth with below-average energy policy, or low-quality energy policy that doesn't take into account the changing international landscape."

Furthermore, both the Deutsche Bank and Center for American Progress reports use current policy — which includes state and local initiatives along with federal law — as the context. With Sens. John Kerry (D-Mass.) and Lindsey Graham (R-S.C.) set to unveil a compromise climate and energy bill on Capitol Hill soon, some of those parameters could change. If they do, Holladay thinks lost economic ground can be made up.

"If there was some sort of pricing on carbon, the U.S. economy is uniquely suited to take advantage of those kinds of changes and develop new technology," he said. "You would imagine that we would have a good chance of catching up to the pack quickly. But that first part is a big 'if.'"

Gordon agreed that putting a price on carbon would start a radical shift in economic progress, as would setting a national renewable energy portfolio standard. "Every country we looked at has a renewable energy standard at the national level," she said. "Having a renewable energy standard sends a message that we're serious about this, but also sets a goal. So that would change the dynamic as well."

She pointed out that in spite of the long-standing complaints that the Kyoto Protocol did not work well to start bringing down carbon emissions around the world, there are some measures indicating that signatories to the agreement saw some economic benefit. Countries that did participate in Kyoto saw an average increase in renewable energy technology patent applications of 33 percent since the time they signed. Over the same period, notable abstainers Australia and the U.S. saw no measurable increase.

Such measures would most likely change, though, if some of the proposed measures on Capitol Hill pass. "There is no question that a piece of national legislation that made a strong statement about a commitment to a low-carbon future would change the game," Gordon said.

### **85. Dutch Agency Launches Probe Into IPCC Report**

Former Dutch environment minister Jacqueline Cramer has asked environmental assessment agency PBL to check for further errors in the 2007 report of the Intergovernmental Panel on Climate Change (IPCC). The international scientific authority has come under increasing fire in the wake of an error over the melting of Himalayan glaciers. In December, the PBL said there was no reason to doubt the IPCC's work in a bid to restore confidence in climate science.

In response to a Dutch parliamentary resolution, the agency will assess to what extent errors in the IPCC report undermine its conclusions on climate. The Dutch Academy of Science will assess the PBL's research. The agency's report will be published in April.

Apart from the glaciers error, the IPCC report incorrectly states the percentage of the Netherlands lying below sea level, the PBL says in its press release. The agency has set up a website for people to report other mistakes.

### **86. UNEP to Lead Study of Links Between Climate Change, Organic Pollutants, Health**

On March 12<sup>th</sup>, the Stockholm Convention Secretariat announced that it will launch a major study of the effects of climate change and persistent organic pollutants on human health and the environment. The announcement was made on the sidelines of the Fifth Ministerial Conference on Environment and Health in Parma, Italy. The March 10-12 meetings, co-hosted by the United Nations Environment Program and the World Health Organization, drew some 800 participants from 52 countries.

The secretariat, which seeks to limit the use of persistent organic pollutants, said 10 multilateral organizations in five countries will collaborate to assess the impact the changing climate is having on current and emerging persistent organic pollutants and therefore on health and the environment.

According to Fatoumata Keita-Ouane, the UNEP official leading the study, preliminary research has indicated that higher temperatures can make some wildlife more sensitive to certain pollutants. "The evidence seems to indicate that in a scenario where worldwide temperatures increase, the net impact could be to increase the severity of the impact that [persistent organic pollutants] have on certain wildlife, especially when combined with other factors," Keita-Ouane told reporters. "The aim of the study is to determine the extent to which the preliminary indications are accurate and to gather data to help us understand what may happen in the future."

According to UNEP, persistent organic pollutants are "persistent, bio-accumulative, and toxic and can affect generations of humans." The organization said that some are considered to be endocrine disruptors, which, by altering the hormonal system, can damage the reproductive and immune systems of exposed individuals as well as their offspring.

### **87. China-Led Bloc to Consider Kyoto Climate Pact Future**

A bloc of the world's fastest growing carbon emitters, seen as key to a global deal on climate change, appears for the first time willing to discuss the future of the Kyoto Protocol to get the United States on board. Kyoto binds about 40 rich nations to cut emissions by 2008-12 and developing countries want a tougher second commitment period. That demand is opposed by many developed nations that want to jettison Kyoto to include emerging markets like India and China.

The next meeting of the environment ministers of Brazil, South Africa, India and China - the so-called BASIC nations - will look at ways to bridge a trust deficit with rich nations, according to its agenda, a copy of which was obtained by the press. "How long will the Kyoto Protocol survive? Could we envisage a shorter second commitment period designed solely to secure carbon markets?" said the agenda of the meeting to be held in South Africa on April 25-26. "If no

second commitment period, what would replace Kyoto?" was another question listed on the agenda.

Unmitigated distrust between rich and poorer nations about who should do how much has stalled negotiations for a global deal to fight climate change. Officials say they are less hopeful of a broader deal in Mexico in November. So a willingness on the part of the BASIC nations to soften their stand on the Kyoto Protocol could help break the negotiations logjam and bring on board the United States which never ratified the protocol.

An Indian negotiator said the agenda was "realistic" and aimed at exploring "all options to get a good deal for all."

The BASIC meeting agenda also said it would consider how elements of the Copenhagen Accord, a political pact that the bloc helped broker last year along with the United States could be included in the current negotiating process. The Copenhagen Accord sets a non-binding goal of limiting global warming to below 2 degrees Celsius (3.6 Fahrenheit) above pre-industrial times and a goal of \$100 billion in aid from 2020. It also lists steps by dozens of nations, including all the top greenhouse gas emitters, to either cut or curb the growth of their emissions by 2020.

The Copenhagen conference was originally meant to agree the outlines of a broader global pact to succeed the Kyoto Protocol.

The South Africa meeting's agenda also will consider whether the BASIC bloc of nations could be expanded and whether smaller groups of powerful nations such as the G20 bloc and the 17-nation Major Economies Forum could be useful platforms for negotiations.

Poorer nations want negotiations to continue on two tracks -- one working on a successor to Kyoto from 2013 and the other looking at longer term actions to fight climate change by all nations.

## GENERAL

### **88. Satellite Data Indicate Very Serious PM<sub>2.5</sub> Problem Globally**

Epidemiologic and health impact studies of fine particulate matter (PM<sub>2.5</sub>) are limited by the lack of monitoring data, especially in developing countries. Satellite-observations offer valuable global information about PM<sub>2.5</sub> concentrations. A research study estimating long-term global fine particulate matter (PM<sub>2.5</sub>) concentrations using satellite data finds that 80% of the global population lives in areas exceeding WHO Air Quality Guideline (AQG) for PM<sub>2.5</sub> (10µg/m<sup>3</sup>).<sup>5</sup>

Global ground-level PM<sub>2.5</sub> concentrations were mapped using total column aerosol optical depth (AOD) from the MODIS and MISR satellite instruments and coincident aerosol vertical profiles from the GEOS-Chem global chemical transport model. Global estimates of long-term average (2001-2006) PM<sub>2.5</sub> concentrations at ~10 km x 10 km resolution indicate a global population-weighted geometric mean PM<sub>2.5</sub> concentration of 20 µg/m<sup>3</sup>. The World Health Organization Air Quality PM<sub>2.5</sub> Interim Target-1 (35 µg/m<sup>3</sup> annual average) is exceeded over central and eastern Asia for 38% and 50% of the population, respectively. Annual mean PM<sub>2.5</sub> concentrations exceed 80 µg/m<sup>3</sup> over Eastern China.

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<sup>5</sup> Environmental Health Perspectives, March 17th, 2010

Evaluation of the satellite-derived estimate with ground-based in-situ measurements indicates significant spatial agreement with North American measurements ( $r = 0.77$ , slope = 1.07,  $n = 1057$ ) and with non-coincident measurements elsewhere ( $r = 0.83$ , slope = 0.86,  $n = 244$ ). The one standard deviation uncertainty in the satellite-derived PM<sub>2.5</sub> is 25%, inferred from the AOD retrieval and aerosol vertical profiles errors and sampling. The global population-weighted mean uncertainty is 6.7  $\mu\text{g}/\text{m}^3$ .

Zooming in on Asia, the study reports that **50% of the Eastern Asian population lives in areas exceeding even the WHO Interim Target 1 for PM<sub>2.5</sub> (35  $\mu\text{g}/\text{m}^3$ )**. WHO has established interim targets as incremental steps towards a progressive reduction of air pollution and are intended for use in areas where pollution is high.

PM<sub>2.5</sub> are particles with aerodynamic diameter less than 2.5 $\mu\text{m}$ . These pose a serious health concern as these can penetrate deep into the lungs (respirable) and can enter the blood stream.

On a global scale, while several national agencies in North America and Europe conduct PM<sub>2.5</sub> monitoring at numerous sites, few long-term PM<sub>2.5</sub> monitoring data are available elsewhere in the world, particularly developing Asia where concentrations and estimated health impacts are greatest. Global aerosol observations from satellite could substantially improve estimates of population exposure to PM<sub>2.5</sub>.

Researchers validated their results by comparing it with ground-based sampling measurements and found a significant level of agreement. However, they note additional research is needed to reduce uncertainty due to non-uniform satellite sampling, cloud cover, and other factors that may limit the accuracy of the satellite-based estimates.

### **89. 466 Million Electric Two-Wheel Vehicles to Hit the Road by 2016**

While the electrification of the automobile has captured strong attention over the past few years, a significantly higher volume market opportunity lies with a different kind of EV – the electric two-wheel vehicle. According to a new report from Pike Research, unit sales in this category, which includes electric bicycles, motorcycles, and scooters, will grow at a rapid pace over the next several years. The cleantech market intelligence firm forecasts that more than 466 million e-bikes, e-motorcycles, and e-scooters will be sold worldwide during the period from 2010 to 2016.

“Demographics and economics are aligning to create a strong market opportunity for two-wheel electric vehicles,” says industry analyst Dave Hurst. “In some countries, these vehicles will be engines of economic growth, while in others they will be signals of broader consumer behavioral shifts.”

Hurst adds that Asia Pacific in general and China in particular, will dominate the global electric two-wheel vehicle market, representing more than 95% of sales during the next six years. He expects that e-bikes will be the largest category with 56% of the market, followed by e-motorcycles at 43% and e-scooters in a distant third place with less than 1%.

According to Pike Research’s analysis, one of the most important market barriers is the lack of established distribution channels for the vehicles. Many manufacturers are working diligently to find a combination of independent dealers, mass retailers, and online sales that will effectively deliver the vehicles and after-sales service to customers.

## **90. Honda Gets 8,000 Orders for CR-Z Sports Hybrid**

Honda Motor Co has announced it had received about 8,000 orders for the CR-Z sporty hybrid car in Japan after less than three weeks on the market, or eight times the monthly sales target of 1,000 units. The two-door compact, which went on sale in Japan on February 26<sup>th</sup>, is the second in a line of low-cost hybrid cars from Japan's No.2 automaker and is scheduled for launch in North America and Europe this summer.

Honda has said it expects to sell 40,000-50,000 of the CR-Z a year worldwide.

Of the orders received in Japan, 40 percent of customers chose the six-speed manual transmission version in what Honda officials said indicated popularity among sports car enthusiasts. Nearly 100 percent of cars sold in Japan are automatic.

Honda trails Toyota Motor Corp by a wide margin in hybrid sales, with the low-cost Insight selling just 3,500 units last month, compared with 27,000 for its rival's flagship Prius.

## **91. Ozone, Traffic Pollution Increase Asthma-Related Hospitalizations in Children**

Both ozone and primary pollutants from traffic substantially increase asthma-related emergency department visits in children, especially during the warm season, according to researchers from the Department of Environmental Health at the Rollins School of Public Health at Emory University in Atlanta. The findings were published on the American Thoracic Society's Web site ahead of the print edition of the American Journal of Respiratory and Critical Care Medicine.

Asthma exacerbations are known to be triggered by air pollutants, but researchers are still trying to disentangle which specific pollutants are to blame, and the extent to which they increase pediatric emergency department visits for asthma. "Characterizing the associations between ambient air pollutants and pediatric asthma exacerbations, particularly with respect to the chemical composition of particulate matter, can help us better understand the impact of these different components and can help to inform public health policy decisions," said lead author Matthew J. Strickland, Ph.D., M.P.H., assistant professor of environmental health.

The researchers obtained data on metropolitan Atlanta emergency department visits for asthma exacerbations in children between five and 17 years of age between 1993 and 2004 and used data on ambient pollutant collected as part of the Study of Particles and Health in Atlanta (SOPHIA). They then analyzed the more than 90,000 asthma-related pediatric emergency department visits with respect to the ambient levels of 11 different pollutants. The availability of daily monitoring data on particulate matter components allowed them to develop a detailed picture of pollutant concentrations and subsequent effects on emergency department visits for pediatric asthma exacerbations.

Ozone was strongly associated with an increase in pediatric asthma exacerbations during the summer, and there was evidence of a dose-response relationship beginning with concentrations as low as 30 parts per billion. Importantly, the current EPA 8-hour ozone standard is based on the three-year average of the fourth-highest measured concentration at any monitor, which must not exceed 75 ppb. Ozone concentrations in many urban areas throughout the U.S., including metropolitan Atlanta, routinely exceed the EPA standard.

Several markers of pollution from combustion engines—i.e., pollutants emitted from the tailpipes of cars and trucks—were also associated with pediatric emergency department visits for asthma exacerbations during the warm season. When they analyzed the effects of multiple pollutants together, the researchers found evidence that ozone and primary pollutants from traffic sources independently affected pediatric asthma exacerbations.

The researchers offered several possible explanations for why the pollution effects appeared stronger in the warm season, noting that “during the summer children are more likely to play outside” and postulating that there may be an “unidentified synergism between the pollutant and a meteorological or physical factor.” Overall rates of emergency department visits for pediatric asthma increased by 60 percent in the cold season, probably because of the important role that respiratory infections have in triggering exacerbations.

“In this study we observed evidence that ambient concentrations of ozone and primary pollutants from traffic sources independently contributed to the burden of emergency department visits for pediatric asthma,” wrote Dr. Strickland. “Further, the associations were present at relatively low ambient concentrations, reinforcing the need for continued evaluation of the EPA’s National Ambient Air Quality Standards to ensure that the standards are sufficient to protect susceptible individuals.”

<http://www.thoracic.org/newsroom/press-releases/resources/strickland-pollution.pdf>

## 92. ICCT Releases New Report on Congestion Charging

Surface transportation congestion is an urgent and growing problem in many urban areas. Congestion contributes to frustrating and costly delays for drivers, urban and regional air pollution, national energy security concerns and global climate change. Congestion charging addresses these issues by charging drivers for operating vehicles at highly congested times and locations to reduce travel times, improve air quality and decrease greenhouse gas emissions.

This paper presents a brief overview of several congestion charging systems in use, reviews the benefits and challenges of the strategy and presents best practice recommendations for policy makers and planners globally who are considering congestion charging. It considers congestion charging experiences in London, Singapore and Stockholm, as well as a Hong Kong pilot program that did not lead to full-scale implementation. In addition, it describes the results of an ICCT-sponsored study of the potential for congestion charging in Santa Clara County, California, an area representative of less concentrated development patterns.

Key observations include the following:

- **Congestion reductions of 13 to 30%, greenhouse gas reductions of 15 to 20% and significant reductions of ozone and fine particulate pollution have been achieved** from implementing congestion charging systems in London, Singapore and Stockholm (based on empirical data), and similar benefits would be expected in Santa Clara County (based on a travel model). Public health benefits may be compounded by increased walking and cycling. Discounts for low-emission vehicles can encourage a transition to cleaner transportation but must be weighed against congestion reduction goals.
- **Cost-benefit results can be favorable.** In the two cases where monetized time savings calculations were available, Stockholm and Santa Clara County, time savings were higher than operating costs by a wide margin. While these are not the only costs and benefits,

they likely represent the largest portion of each and thus provide an indicator of overall costs and benefits. Studies found no difference in economic growth inside the charging perimeter compared to surrounding areas in London and no effect on retail sales in Stockholm.

- **Multiple technologies have been proven** in congestion charging or closely related road pricing applications, creating flexibility in implementation. These include camera-based recognition, radio-frequency identification, dedicated short-range communications, and global positioning satellite systems combined with cellular radio communications.
- **Initial public acceptance can be difficult to secure, and implementation of congestion charging can require time to build consensus.** London first studied the concept of congestion charging in the mid-1960s. Singapore used these studies and concepts to implement its first Area Licensing Scheme in 1977. In London and Stockholm - the two most recent examples covered in the paper – initial public opposition did not prevent implementation of congestion charging, and public support increased after the program began. In Hong Kong, uncertainty and local political opposition helped stop an initial 1983-1985 congestion charging technology pilot testing from resulting in full implementation though the idea has since been reconsidered. Because some drivers will perceive a net loss from the charge, effectively communicating overall benefits is very important, as is addressing concerns about privacy and the concerns of business owners about possible economic impacts.
- **Upfront investments in public transit may be necessary** to absorb increased ridership and to provide affordable mobility for low-income populations. These investments can also help create confidence that implementation of a congestion charging system will provide tangible benefits. Congestion charging systems are more effective when they provide net benefits for the majority of travelers through reduced driving times and improved transit access and reliability.
- **Net revenue generated by congestion charging can be used for transit enhancements and other benefits.** Providing increased transit can enhance the effectiveness of congestion charging. After funding transit improvements, revenue may also be available to make improvements for pedestrians, cyclists and drivers. Some targeted revenue recycling back to area residents or for other purposes may also be viable. Public confidence that revenues will be used for transportation improvement is an important element of any congestion charging strategy.
- **Convenient, flexible payment systems are important components to facilitate congestion charging implementation as well as shifts to public transport.** Existing congestion charging systems in Singapore, London, and Stockholm have various convenient payment options. In addition, these areas and Hong Kong have introduced various smart/debit card systems for commuters of all forms of public transport.