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CAR LINES

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EUROPE

1. Renault Sees Diesel Disappearing From Most of Its European Cars

Renault expects diesel engines to disappear from most of its European cars, company sources told reporters, after the French automaker reviewed the costs of meeting tighter emissions standards following the Volkswagen scandal. The sober reassessment was delivered at an internal meeting before the summer break. It shows how, a year after VW admitted engineering software to cheat U.S. diesel emissions tests, the repercussions are forcing major European car makers to rewrite strategic plans that will shape their futures for years to come.

Renault and domestic rival Peugeot, both heavily invested in diesel technology, initially scrambled to defend its future viability after the VW crisis erupted. But in the July meeting, Renault's Chief Competitiveness Officer Thierry Bollore said the diesel investment outlook had dimmed significantly, according to two people who were present.

"He said we were now wondering whether diesel would survive, and that he wouldn't have voiced such doubts even at the start of this year," said one of the people. "Tougher standards and testing methods will increase technology costs to the point where diesel is forced out of the market," Bollore reportedly said.

Diesel engines, pricier but more efficient than gasoline, had already vanished from the smallest 'A'-segment vehicles like Renault's Twingo well before VW's so-called 'dieselgate', as their extra expense outstripped savings on fuel.

By 2020, Renault now predicts that the toughening of Euro 6 emissions rules will push diesel out of cars in the next 'B'-segment size category, including its Clio sub compact, as well as some 'C' models such as the Megane hatchback.

Models in those first three size categories accounted for most of the group's 1.6 million European deliveries last year, and more than 60 percent were diesels.

"Everybody is backtracking on diesel because after 2017-18 it becomes more and more expensive," said Pavan Potluri, a power train analyst with consulting firm IHS Automotive.

While the VW scandal centered on the German carmaker's cheat software, it also focused public attention on an industry-wide disparity between nitrogen oxide (NOx) emissions on the road and those recorded in regulatory tests. Mass-market diesels that meet legal NOx limits in approval tests commonly emit five times as much or more in everyday use. The gases contribute to acid rain and respiratory illnesses blamed for hundreds of thousands of deaths globally each year.

Starting in 2019, however, vehicle approvals will be based on emissions performance during real driving. This is forcing manufacturers to install costlier emissions treatment systems. The business case for diesel can only deteriorate further, industry leaders realize, as targets become stricter, while electric and hybrid car batteries get cheaper and more powerful.

"Beyond 2025 there may be some manufacturers that completely drop diesel, because the cost of electrification will have come down significantly," Potluri said.

Diesel car sales will plummet to 9 percent of the European market in 2030 from 52 percent today, management consultant AlixPartners - regarded as an authority on the auto industry - predicted in June, with the decline accelerating after 2020.

Renault and alliance partner Nissan assume the next wave of emissions rules, Euro 7, could halve NOx output limits again to 40 milligrams per kilometer, senior powertrain engineer Alain Raposo told a technical conference this summer.

Renault is not alone in predicting a bleak future for diesel, though its projections go further than the doubts expressed by other car makers about the technology. VW now wonders "whether it still makes sense to invest a lot of money in further developing diesel", Chief Executive Matthias Mueller said in June. The German carmaker's final bill for the scandal will likely far exceed the \$15 billion settlement agreed so far in U.S. fines and vehicle buy backs.

Wolfsburg-based VW is the only carmaker to have admitted using illegal software cheats. Similar allegations have been leveled by German officials against Fiat Chrysler (FCHA.MI), and by South Korean authorities against Nissan vehicles equipped with Renault engines - and in both cases denied.

Renault, however, has been forced to concede that its real-world NOx emissions are far worse than the industry average, and the carmaker remains under investigation by French consumer fraud authorities. That has deepened Renault's engineering headache and tarnished the green image it cultivated with electric car launches and lower-than-average emissions of carbon dioxide (CO2), the dominant focus of regulators prior to dieselgate. In road tests on almost 100 vehicles, ordered by a French commission on diesel emissions, Renault and Nissan cars produced more than eight times the regulatory NOx limit on average, with most of their Euro 6 models closer to 10 times the limit.

Renault engineering chief Gaspar Gascon Abellan told the commission that the NOx-cutting exhaust gas recirculation (EGR) in its top-selling diesel engines had been found to cause serious turbo clogging problems. Engineers had responded by programming the EGR to shut down outside a narrow range of air intake temperatures, 17-35 degrees Celsius (63-95 degrees Fahrenheit). While passing regulatory tests carried out near room temperature, the protocol sends NOx emissions sky-high on the road. Renault, Opel, Fiat and others have said such "defeat devices" are legal because they are designed to protect their engines rather than cheat tests. But the French commission said their technical justifications "remained to be proven".

Gascon Abellan agreed during hearings that Renault's EGR restrictions "could be considered conservative" and would now be relaxed by software tweaks to existing models, with no significant engine changes. "I recognize that we could have done this earlier," he said.

In common with Ford, VW and Mercedes, Renault is scrambling to catch up with Peugeot by rolling out costlier selective catalytic reduction (SCR) systems to rein in NOx emissions in real-world driving.

Bollore, the competitiveness chief, blamed "diesel consequences" in part for a 115 million euro (\$128 million) research and development overspend that weakened first-half earnings.

Renault's electric car program and CO2 performance remain important assets in a world of ever-tightening emissions laws, Exane BNP Paribas analyst Stuart Pearson said. "But they're going to have to address the diesel issue and add more SCR content than others," Pearson said. "It might

be one reason why Renault's earnings could be handicapped relative to Peugeot over the next few years."

2. Toyota to Drop Diesel Engines from New C-HR Compact Car

Toyota has decided to drop diesel engines from its new C-HR compact in the wake of Volkswagen's emissions scandal and will probably do the same for future model renewals, the carmaker's second-ranking global executive said recently. The Japanese automaker decided "within the last six to 12 months" not to offer a diesel version of the car, unveiled at the Paris auto show, because demand for the powertrain technology is falling sharply, Executive Vice President Didier Leroy told reporters in an interview.

If faced with a renewal decision today for other models up to and including the larger Auris compact, a Toyota staple, "we would probably do the same thing", Leroy added.

Toyota's decision is the latest example of how the so-called "dieselgate" scandal is forcing carmakers to rewrite strategic plans that will shape their futures for years to come.

3. EU NRMM Stage V Regulation published

On 16 September 2016 the Non-Road Mobile Machinery (NRMM) Stage V Regulation was published in the Official Journal of the EU as Regulation (EU) 2016/1628. The co-decision act contains the engine categories, emissions limit values, introduction timing, durability requirements, as well as a number of administrative provisions.

Engine category	Description
NRE	Engines for NRMM neither covered by other categories nor excluded
NRG	Genset engines >560 kW
NRSh	hand-held SI engines <19 kW
NRS	SI engines <56 kW not included in NRSh
IWP	Inland waterway vessel engines for propulsion and 19 kW
IWA	Auxiliary engines for inland waterway vessel 19 kW
RLL	Locomotive engines
RLR	Railcar engines
SMB	SI engines for snowmobile
ATS	SI engines for All-Terrain Vehicle (ATV) and Side-by-Side (SbS)

Engine categories are then divided into sub-categories, based on the power range of engines.

For most engine categories, implementation dates are 1/01/2018 for type-approval of engines and 1/01/2019 for placing on the market of engines. These dates are postponed by one year for NRE engines between 56 and 130 kW, for inland waterway vessel engines (both IWP and IWA) above 300 kW, and by two years for rail engines (both RLL and RLR categories).

Stage V introduces a Particle Number limit of 1×10^{12} /kWh for NRE engines between 19 and 560 kW, for inland waterway (IWP and IWA) engines >300 kW, and railcar (RLR) engines. There is no more distinction between constant- and variable-speed engines when it comes to emissions limits.

Emission durability periods (EDP), the number of hours used to determine the deterioration factors, are defined for each engine sub-category. For the main variable speed NRE engines

category, the EDP is 3000 h for engines <19 kW, 5000 h for 19-37 kW engines, and 8000 h for engines 37 kW.

Non-Road Steady-state test Cycles (NRSC) are defined for each engine sub-category; Non-Road Transient test Cycles (NRTC) are defined for NRE engines between 19-560 kW and for some NRS engines.

4. Diesel Scrutiny Shifts to London's Building Sites

Volkswagen's admission it cheated pollution law has exposed a wider problem of diesel emissions from thousands of generators belching fumes across building sites and countryside. In London, where the pollution is aggravated by a construction boom, a firm that helped expose the extent of the Volkswagen scandal has shifted its attention to diesel generators and is working with city authorities and researchers from King's College London (KCL) to analyze the problem.

"It (the Volkswagen scandal) served to rip the lid off all these related issues about engines," said Nick Molden, CEO of Emissions Analytics, which helps automotive businesses raise their fuel efficiency and reduce emissions. Since 2011, his firm has been collecting data from diesel cars by attaching measuring equipment to exhaust pipes to demonstrate the gap in emissions levels between driving on the road and in the laboratory tests Volkswagen rigged using software known as defeat devices.

For 18 months, Emissions Analytics has also been measuring the fumes from diesel generators needed at construction sites as mains electricity has to be cut off. Diesel is used as a quick, simple and cheap solution. Molden said tests of an 8 kilowatt generator, smaller than many on construction sites, found it emitted roughly six times more nitrogen dioxide than the average London bus and 15 times more particulate matter per unit of work done. There is no question of cheating regulations as new European Union law on pollution limits for small generators has yet to be phased in.

Emissions vary depending on the size and age of generators and the research is ongoing to get more data.

Separate KCL research has concluded that nitrogen oxides and particulate matter, or soot, from diesel cause around 9,500 premature deaths annually in London. For Europe as a whole, the estimate is 400,000 early deaths per year from asthma, cardiovascular disease and cancer. Research also suggests a link between diesel fumes and dementia.

Much of the pollution is from traffic, but construction site machinery accounts for an estimated 12 percent of soot and 15 percent of nitrogen oxides pollution in London, city authorities say.

Generators are also an issue in the countryside where emergency backup generation on farmland is encouraged by government subsidies. The government, which plans a consultation on diesel generation, says it represents only about 1.5 percent of backup generating capacity.

5. U.K. Failure on Air Pollution Said to Kill 23,500 Annually

The U.K. government's continued failure to meet targets to reduce nitrogen dioxide levels poses a significant public health risk that causes 23,500 premature deaths annually, environmental lawyers said October 18.

Legislation introduced in December 2015 to cut dangerous levels of airborne nitrogen dioxide “gave disproportionate and unlawful weight to cost and political sensitivity,” Nathalie Lieven, a lawyer for ClientEarth, said at a trial probing whether the government acted lawfully and proportionally in trying to meet the targets.

European laws were introduced in 1999 in a bid to tackle air pollution across the continent with countries given until 2010 to meet them. The U.K. is split into 43 zones to monitor nitrogen dioxide levels, and only six have complied with regulations, Lieven said.

The U.K.’s top court called for “immediate” action over the dangerous levels of smog in the country in April 2015 after a successful bid by ClientEarth to challenge the government’s policy that triggered the Air Quality Plan. The plan is “flawed” and needs to be “drastically” improved, ClientEarth said. The Department for Environment, Food and Rural Affairs said the plan will hit its targets by 2020 nationwide and 2025 in London.

The policy is “the product of a complex and thorough decision making process,” Kassie Smith, a government lawyer, said in documents prepared for the two-day hearing. “The plan is a ‘living instrument.’ It has been designed to be responsive to changes in the best evidence available and any other developments. “

London Mayor Sadiq Khan, elected in May, has made tackling the capital’s filthy air a priority of his administration. The mayor’s office is an interested party in the judicial review hearing. On October 18, he told the LBC online radio station that “much more needs to be done” to rein in pollution. “I’m concerned whether enough is being done to fix the air in London,” Khan said. “I published the boldest, most ambitious plans to fix air quality before the summer.”

London has repeatedly broken EU air-quality rules. It took the city just eight days in 2016 to breach the annual cap on nitrogen dioxide pollution episodes. The major contributor to the high levels of smog are diesel engines, Lieven said. Overall, air pollution kills 40,000 people a year in the U.K., ClientEarth said.

6. Four In 10 UK Councils Exceed Air Pollution Limits, Figures Show

Four in 10 of Britain’s local authorities breached legal air quality limits last year, largely due to heavy road traffic, government records reveal. Ministers have admitted that 169 local authorities were found to have gone over annual limits on nitrogen dioxide. It is an invisible gas produced predominantly by road traffic, and is linked to lung disease and cardiovascular problems such as heart attacks and strokes.

Monitoring stations in councils across all four nations of the UK recorded breaches of the legal limits on NO₂, data from the Department for Environment, Food and Rural Affairs shows.

A report in April from the environment, food and rural affairs select committee stated that poor air quality was linked to more than 40,000 premature deaths in the UK every year. The committee is chaired by Neil Parish, the Tory MP who obtained the latest figures from the government.

Parish said: “These are shocking statistics. When we think of areas breaking air quality laws, we usually think of a handful of areas in our busiest towns and cities. These figures show just how widespread the problem is across the UK. It requires a comprehensive solution – urgently”.

Parish said he was working with the liberal conservative think tank Bright Blue to secure the power and funding to introduce a clean air zone in pollution hotspots in all local authorities. This month, the government made available £3m for councils to bid for funding to improve air quality.

“The government needs to act now to give all councils the power – and crucially, the funding – to implement a clean air zone and limit the most polluting vehicles in hotspot areas. The £3m government funding pot is a start but not nearly enough. We also need a big push to incentivize electric and low emissions vehicles to replace the oldest, most polluting vehicles.”

Sam Hall, environment researcher at Bright Blue, said the worst polluting cars should be banned from cities in order to tackle the problem. “Forty percent of local authorities in the UK breached legal air pollution limits last year,” he said. “Poor air quality is clearly a national public health issue that requires urgent action.

“The government’s current plans for clean air zones in just five cities do not go far enough. Ministers should enable all city councils to set up clean air zones to restrict the dirtiest cars from urban centers. “Together with measures to encourage greater uptake of electric vehicles, this approach would reduce air pollution, cut carbon emissions and boost automotive manufacturing in the UK.”

7. Volkswagen Avoids Consumer Probe in U.K. Over Emissions Scandal

The U.K. antitrust watchdog said it won’t pursue Volkswagen AG for admitting the use of software to cheat vehicle emissions tests, joining European regulators in being more reluctant to extract concessions from the automaker than counterparts in the U.S.

The Competition and Markets Authority won’t launch a formal probe into the Wolfsburg-based company “at this time” because new powers enabling it to secure compensation for consumers only came into power in October last year, a month after the allegations emerged, the regulator said in a statement. There has been anger about the wide disparity between the packages offered to American car owners compared to European customers. Americans are getting packages worth thousands of dollars but those in the EU were simply offered repairs.

“The CMA’s civil enforcement powers have limited application to the alleged wrongdoing that took place,” the regulator said in the statement. “Regarding a criminal investigation, an important consideration was that the alleged misconduct at the root of this issue appears to have taken place outside the UK, notably in Germany. “

8. Volkswagen Representatives Walk Out Of Mayo Court Emissions Case

Legal representatives for Volkswagen walked out of court in Mayo recently after labelling an ongoing court case regarding emissions as “entirely inappropriate and unfair”. Barrister Paul Fogarty and two instructing solicitors from A&L Goodbody walked out of Castlebar District Court after Judge Mary Devins ruled that she would continue with the case.

Earlier Mr. Fogarty told Judge Devins that his clients, Volkswagen Group Ireland and Volkswagen AG had obtained legal advice that the court had no jurisdiction to take the case. He said that as a result representatives were not present in court and the defense would be calling no witnesses.

Mr. Fogarty said his clients also took the view that there were serious issues in relation to orders previously made by the court in the case and raised concerns about the manner in which evidence

would be given by witnesses for the claimant. He said the manner of the case was “highly unconventional”.

He informed Judge Devins that the respondents would be seeking a judicial review in the matter.

Judge Devins said the case would continue “without Hamlet” and later referred to the actions of the legal team as a “spectacular walk out”

The case, before Castlebar District Court is being taken by mother of three Eithne Higgins Croghan, Boyle, Co Roscommon. She is seeking compensation after Volkswagen admitted cheating on emissions tests last year.

The case will deal with whether there was an issue with carbon dioxide (CO₂) and / or oxides of nitrogen (NO_x) emissions on the vehicle in question. Ms. Higgins’ claim states that there may be implications in respect to the payment of Vehicle Registration Tax or road tax as a result of incorrect emissions data. The court heard that after the emission revelations emerged she attempted to trade in her car at three different garages, each time unsuccessfully.

Evan O’Dwyer, representing Ms. Higgins criticized the respondents and their legal representation, stating that he and his client had been ‘bullied’. He also criticized the manner in which the respondents had treated the court by arriving late on one occasion, failure to make a witness available, failure to provide adequate data and the failure of the respondents to attend court. He also claimed he had received letters from A&L Goodbody threatening him with contempt while Ms. Higgins had received three letters stating the company would pursue her for costs if she proceeded with the case.

“There has been a system of bullying going on in this case from the beginning. Bullying of Ms. Higgins, myself and laterally this court. Attempts have been made to goad this court so that a judicial review could be sought.

“They are trying to set-up this court for a judicial review,” he added.

He added that the quality of information provided by Volkswagen “belittles” the court.

A statement from Volkswagen Group Ireland’s technical services manager Stephen McDonnell was read into the record. Mr. McDonnell did not attend despite having been directed by the judge to do so. His statement stressed that CO₂ emissions were not linked to the NO_x emissions.

However, this was dismissed by emissions expert Horace Calvert Stinson who said it didn’t stack up with theory, practice or experience. He stressed the issue of CO₂ and NO_x could not be separated adding they were “intimately related” and were completely interdependent on each other. Dr. Calvert Stinson said the data provided by Volkswagen was not sufficient in this case and was not fit for purpose.

This was also the view of Michael Lehmann who was involved in the Volkswagen litigation in the US. He said the level of information provided to the court fell well below the data provided for similar cases in the US adding that there was a “complete absence of hard data”.

9. VW Agrees to Fix Cars in European Union

Volkswagen AG agreed to repair cars affected by the diesel-emissions scandal as European Union regulators at least temporarily backed down from demands the company offer compensation to consumers on the continent. VW will carry out an “EU-wide action plan” to inform customers and repair the vehicles, EU Justice and Consumer Affairs Commissioner Vera Jourova said September 21 after meeting with Francisco Javier Garcia Sanz, VW’s top negotiator for diesel issues, in Brussels.

There has been anger among consumer groups about the wide disparity between the packages offered to American car owners compared to their European counterparts. While Americans are getting packages worth thousands of dollars, those in the EU were simply offered repairs.

While Jourova called the agreement an “important step,” she previously said she was working with consumer groups to ensure that the 8.5 million European owners are treated fairly. Volkswagen said it wouldn’t offer anything beyond repairs in the region.

Following the meeting with Garcia Sanz, an EU official said it wasn’t the commission’s role to impose fines or order compensation. The official said that was a matter for national courts and enforcement authorities to decide on a case-by-case basis. Jourova said in a statement that she “will closely monitor this commitment and continue to work with consumer organizations, authorities and Volkswagen.”

VW is facing the wrath of investors, with shareholders demanding more than 8.2 billion euros (\$9.1 billion) in German courts alone.

For EU consumers, VW “agreed that all the vehicles affected by the diesel emissions issue have to be brought in full conformity with the applicable [NOx] emissions regulations,” European Commission spokesman Christian Wigand said in a statement. VW “agreed to offer a comprehensive and transparent action plan for all affected consumers in the EU, including proof of conformity.” He said the plan “will be carried out within a defined time frame and include explanation on the process for affected consumers in each country” and “Volkswagen commits to inform the customers by end 2016 and to have all cars repaired by autumn 2017.”

Volkswagen officials, including Chief Financial Officer Frank Witter, justified better terms in the \$15 billion settlement with the U.S. government, saying the technology fix in Europe is easier and customers in its home market don’t face the same drop in their cars’ value.

10. Volkswagen Emissions Scandal Sees First Spain Verdict

A regional Spanish court has ordered Volkswagen-Audi España, SA and a local dealership to jointly pay a consumer 5,007 euros (\$5,468) for the “manipulation of diesel motor emissions,” making it the first Spanish ruling against the Volkswagen Group’s emissions software scandal.

In a ruling announced by Spain’s Judicial Authority Oct. 26, the First Court of Instance 12 of Valladolid determined that the company had violated its “duties in good faith” to comply with its obligations as vendor of a diesel vehicle with product literature falsely stating it met the European Union’s Euro V emissions standards.

The Spanish verdict came as the EU urged VW to compensate European consumers affected by the software scandal arising from the company’s admission in 2015 that it had used software on some 11 million vehicles to cheat on pollution tests.

“This is a mass action that affects consumers as a whole, which implies deception of monitoring authorities, brings with it the infraction of basic sector regulations like prior approval, and affects a public good like the environment,” stated the court.

While recognizing that VW publicity didn’t specify the level of nitrogen oxide pollution required for vehicle approval, the court said it “has been demonstrated” that the Volkswagen Group “installed software to outwit monitoring of said particulate emissions in the approval process.”

The monetary reward was based on an estimated 10 percent depreciation of the vehicle’s total value due to the software issue.

11. EU Fears VW Diesel Fixes Could Damage Engines: Der Spiegel

The European Commission fears steps taken by Volkswagen to refit polluting diesel cars may damage the vehicles’ engines, the Spiegel magazine reported, citing unidentified staff at the European Union’s executive branch. Software updates carried out by Volkswagen (VW) could inflict greater stress on engine components, Spiegel cited a member of staff at the Brussels-based Commission as saying.

Commission officials are basing their concerns on feedback from experts at the "Vela" emissions laboratory in northern Italy, the weekly magazine said, without providing more detail.

Germany-based VW denied its technical modifications would cause damage to the cars. "The software update will have no adverse influences on (fuel) consumption or the durability of the engine and its components," a company spokesman said.

EU consumer affairs Commissioner Vera Jourova has sought to ramp up pressure on VW to compensate European owners of rigged diesel vehicles and has asked the carmaker for guarantees its technical fixes will work. "We need VW to guarantee, in a legally binding way and without any time limit, that the repairs will work and do not have any negative impact," a Commission official told Reuters.

Consumer groups and politicians in Germany have been angered by VW’s refusal to offer compensation, noting drivers are stymied in many EU nations by their inability to file U.S.-style class action lawsuits.

Germany’s VZBV consumer lobby is backing the EU’s call for VW to guarantee its technical fixes will have no negative effects on vehicles. But it made no progress in a meeting with VW to secure such a guarantee, a spokeswoman said.

"An advanced guarantee declaration is not necessary," a VW spokesman said, noting the carmaker’s diesel fixes were subject to comprehensive tests to ensure there will be no negative impact on engine components or emissions clean-up systems.

12. VW Sued for Record \$9.2 Billion in German Investor Lawsuits

Volkswagen AG faces Germany’s biggest investor lawsuit as attorneys filed complaints totaling 8.2 billion euros (\$9.2 billion) related to the diesel emissions scandal that wiped out a third of the company’s market value. About 1,400 lawsuits are currently pending at a court in Braunschweig, about 20 miles from Volkswagen’s Wolfsburg headquarters, a judicial spokeswoman said

September 21. Investors said they lost money on VW shares because the company was slow in disclosing the emissions-cheating issue.

Investors have lined up to sue in Germany, where VW shares plunged in the first two trading days after the September 18 disclosure of the emissions scandal by U.S. regulators. September 19 was the first business day after the anniversary of the scandal, and investors had feared they needed to sue within a year of the company's admission that it had equipped about 11 million diesel vehicles with software to cheat on pollution tests.

The amount is less than the 10.7 billion euros that had been expected based on lawyers' statements, but more suits could still trickle in because of uncertainty about when the deadline expires. The court may need about four weeks to register all the complaints, it said.

Volkswagen, in a statement, reiterated its view that it complied with capital-market rules and that the claims are unfounded.

Volkswagen has set aside about 18 billion euros to cover the costs of the scandal, but the lawsuits won't likely add to the tally in the near future. The Braunschweig cases will likely take years, but during the next several months:

- Volkswagen will get a chance to respond to the complaints;
- The judges will decide whether to delay the litigation pending the result of a "model case" under a procedure that centralizes the evidence phase in large-scale shareholder litigation;
- Model-case proceedings are currently pending at the Braunschweig Appeals Court. That tribunal will have to choose one of the plaintiff lawyers to become lead counsel, which could happen by the end of the year.
- Braunschweig Appeals Court will then work on a list of issues to be resolved as the plaintiffs are seeking answers to hundreds of questions of law and fact;
- New cases could be filed as lawyers argue that for most plaintiffs, the deadline to bring the suits expires at the end of 2018.

13. VW Scandal Forcing Audi to Delay Technology Projects

Audi are reportedly delaying certain technology projects in order to cut costs due to the parent company's financial issues as well as their own need to focus on electric and autonomous systems. The Ingolstadt-based automaker will scale back its conventional car program in order to finalize a strategic shift towards green vehicle and digital services through 2025 as they can't afford to fall behind their two main competitors, Mercedes-Benz and BMW.

Sources say that cutbacks are expected to affect next-generation tech projects which would have helped Audi clean up their image in the wake of VW's emissions scandal. Among the projects that Audi will postpone is a test-track for self-driving vehicles as well as facilities to make batteries and concept cars.

An Audi spokesman stated that one postponement will involve a planned technology park at the company's home in Ingolstadt, Germany - which is now on hold for the foreseeable future.

Evercore ISI analyst Arndt Ellinghorst told Autonews that there was still "room for improvement" at Audi in terms of cutting the costs of physical assets. "We welcome the fact that all parts of VW are looking to lower their excessively high costs."

Despite these efforts, some analysts still feel that Audi invests more cash overall in property, plant and equipment than BMW and Mercedes.

14. Germany's Porsche Likely to Face Investor Test Case over Diesel Probe

Porsche Automobil Holding SE could follow Volkswagen AG into a morass of investor lawsuits over how the automakers informed the public about the diesel-emissions scandal.

A Stuttgart court is likely to bundle nearly 150 lawsuits under a special procedure for large cases, presiding Judge Fabian Richter Reuschle said September 30th at a hearing, referring to a procedure akin to U.S. class actions. He was overseeing a hearing in a case filed by a U.K. pension fund that is seeking 5.7 million euros (\$6.4 million). All the cases total about 900 million euros, the judge said.

The Porsche shareholders said they lost money because the company failed to disclose in a timely manner the risks Volkswagen faces from installing software that cheated on emissions tests. Since then-Volkswagen Chief Executive Officer Martin Winterkorn also served as Porsche's head, the company, which owns more than 50 percent of VW's stock, should have disclosed the scheme on its own and much earlier, investors argue.

The lawsuits in Stuttgart constitute a second front for investors. VW's stock price dropped 35 percent and Porsche's 32 percent in the two trading days after U.S. regulators disclosed the software that detected when a car was on a test stand and reduced harmful emissions to allow the vehicle to pass inspections.

The judge said he will wait until after he has heard a separate investor case involving Porsche and Volkswagen jointly in Stuttgart before making his ruling. This may not come before the end of the year. The hearing on September 30 was in a lawsuit led by West Midlands Pension Fund, one of the U.K.'s largest retirement funds, covering the areas including Birmingham and Coventry.

Volkswagen is facing 1,400 suits seeking a total of 8.2 billion euros in the Regional Court of Braunschweig.

Porsche lawyer Markus Meier said the holding company first heard about the scandal on September 18, 2015, when U.S. authorities disclosed it. It couldn't inform markets earlier as Winterkorn wasn't permitted to share confidential information he received in his role at VW.

The court will look into the responsibilities of executives serving on multiple boards of legally separate companies, Judge Richter Reuschle said. While principally they are barred from disclosing what they learned from one company to the other, the VW case could have been different because Porsche was a major shareholder.

"When we're talking about risks so grave that they may threaten to destroy the company, then there may be a duty to disclose the information by a person who serves on both boards," the judge said. "In such circumstances, the law could assume that both companies know what their CEO knows. We have to see whether that applies to Porsche and VW."

15. Dieselgate: German Officials 'Heard Only Rumors'

Leading officials from the German Environment Ministry say they all had the feeling something was wrong with the emission figures of diesel vehicles. But, they never could imagine the scale of Volkswagen's deception, they said on October 20 in Berlin, during the first hearing of responsible officials, a ten-hour marathon meeting of the parliamentary committee of inquiry into the emissions scandal.

No one at the ministry of environment had any idea that millions of Volkswagen diesel cars had software that recognized emissions test, and caused them to appear cleaner than they actually were, five senior officials, testifying in the Bundestag's Paul-Loebe-Haus, said.

The German committee, chaired by MP Herbert Behrens of the far left Die Linke, was set up in July and operates independently from the group of MEPs investigating the same issue in the European Parliament, where on the same day transport minister Alexander Dobrindt denied any responsibility.

The German inquiry committee confronted the witnesses with documents dating from 2007 in which the possibility of cheating software, or defeat devices, were mentioned.

"We knew it was technically possible to disable certain functions in the laboratory with software and that the car recognizes when it is on the dyno test", said test expert Oliver Eberhardt. "But we had no idea there was fraud involved."

According to Eberhardt such functions are, in most cases, legal, and even necessary for testing. "That is why it never occurred to us that they would be tampered with," said Eberhardt.

His chief from 2009 to 2013, Hubert Steinkemper, said that despite knowing that test-detection was possible, he had not considered this could be used to cheat.

According to the legal complaint from US attorneys, it was during the tenure of Uwe Lahl, head of the traffic department at the ministry of environment, between 2001 and 2009 that the Volkswagen Group subsidiary Audi began using the software in Europe. Lahl said he'd heard rumors from colleagues in casual conversations around 2007 or 2008, but could not remember who.

Lahl and his staff didn't have enough evidence to take action, he said. "Now I can tell you exactly what to investigate. At that time we had no idea where to start and what was going on anyway."

At that time, various NGOs, such as the German automobile club ADAC and non-profit environmental and consumer protection association Deutsche Umwelthilfe (DUH), pointed to the increasing gap between the emissions level which was indicated by the car manufacturers and what was actually measured.

"But without hard evidence, we could do nothing. You don't know what you should examine exactly, that could only come from the car industry itself. We did not have that information."

Lahl says he and his former employees lacked the technical knowledge. "We are good at politics, making laws. Not in the design of tests."

He added: "We did not know how we could convert a presumption into evidence. We could have saved Germany and German industry for a lot of damage. This is very regrettable."

Marion Wichmann-Fiebig works in measuring German air quality. She always had the feeling that something was not right. "That annoyed me. But I'm a meteorologist and therefore I have no technical knowledge of cars. So I could never suspect what tricks were used."

Steinkemper and his predecessor Lahl said that in their time as chief of the department of traffic of the ministry of environment, they always worked towards better and stricter tests, because they were sure the old methods were no longer effective.

MPs demanded explanations from officials of a damning report in Der Spiegel, when the German magazine reported in September that in 2008 a civil servant of the environment ministry had written in a draft version of a strategy paper on market surveillance that checks on the use of defeat devices were "not provided for". The passage was removed before the paper was sent to the transport ministry, Der Spiegel reported.

But Steinkemper dismissed suggestions of the passage being deleted, only "weakened", saying that the text had to change. "You cannot write something without concrete evidence. It was abstract and it was just seen as a technical possibility," he said, adding even with the knowledge of today, he wouldn't have done something differently.

"We had no evidence. Zero. No one had."

However, Steinkemper admits the adjustment had also had something to do with anticipated pressure from the ministry of transport. "What if we would have written it without any proof? Then we would have come into a very difficult position. That would have been irresponsible."

16. EU Has Learned From Volkswagen Scandal, Says US Emissions Chief

In September 2015, the United States' Environmental Protection Agency (EPA) discovered that Volkswagen had been cheating regulators and manipulating their vehicles to show lower amounts of emissions during laboratory tests than on the road in real use. A year later, the European Union's Committee of Inquiry into Emissions Measurements in the Automotive Sector talked with Christopher Grundler, the director of the EPA's Office of Transportation and Air Quality, about how US emission laws differ from EU law, and why the US government was able to catch VW when the EU wasn't.

Grundler, the man to whom VW officials admitted cheating, sat down with Deutsche Welle (DW) to talk about what advantages US regulators have over EU regulators, and how the EU has and can still improve its oversight of the automotive sector.

DW: What do you think is the biggest difference between US and EU regulations when it comes to emissions standards?

Grundler: That's easy to answer. It's the United States Clean Air Act. The Clean Air Act provides the EPA with very broad and centralized authority in one place to assess, understand and address air pollution from the transportation sector. We've used it and we know it's working because our air quality monitors are showing it.

Clearly, the context in Europe is different, with 28 member states and many different types of approval authorities, the [European] Commission does not have investigatory or enforcement powers. We [at the US] think it's a strength to have this all located in one place and to have the

technical resources and the laboratory all co-located to do this work. Another strength I noted was the way we do our work through a very collaborative and transparent process, so everyone can look at the information and understand the basis for decisions we make.

DW: So would you say that the US benefits from having one central authority that's making all the decisions?

Grundler: Oh without a doubt. In the United States, there is no constituency for delegating this work to 50 different states. It's one car market. People take the vehicles across borders. That would be a nightmare if it were subject to different approaches, different standards and different interpretations across the states.

With our context, with our history, under our law, it has worked. But I want your readers to understand that we've had to adapt and change throughout the years to respond to changing technology and changing circumstances. No system is perfect, but it has been a big advantage to have one organization with a laboratory and with deep technical competencies oversee this sector.

DW: What is the EU doing wrong?

Grundler: Nice try. (laughter)

DW: What could the EU learn from the US model?

Grundler: I think they have learned, to be frank about it. No one in the United States or in fact, in Europe, should be surprised about the discrepancy between lab tests, and the Commission has been reporting on it for quite some time. I don't have detailed knowledge, but from afar, it seems as though the Commission is attempting to address it with new real-world testing requirements as well as their proposal to address the approval process. Both seem to us as steps in the right direction.

17. European Lawmakers Call for Cooperation in Car Emissions Probe

The European Commission and European Union national authorities should more readily provide information to an inquiry into possible regulatory failings that might have contributed to the Volkswagen "dieselgate" scandal, European Parliament lawmakers said September 13. Sitting in Strasbourg, France, members of the European Parliament voted 618–26, with seven abstentions, for a nonbinding resolution on the work of the Parliament's Committee of Inquiry Into Emission Measurements in the Automotive Sector, which was set up after the discovery in the U.S. of the use by VW of a software defeat device to cheat tests for emissions of nitrogen oxides.

The Parliament inquiry into the issue started in March with a mandate to deliver its findings in early 2017. The inquiry so far has taken evidence from EU officials and industry experts.

The resolution on the work of the inquiry said the European Commission, the EU's executive arm, should "ensure prompt support and full transparency," in particular through "swifter submission of requested documentation," while EU national authorities should more rapidly approve the release of documents to the inquiry.

Gerben-Jan Gerbrandy, a Dutch liberal lawmaker and one of the inquiry committee's rapporteurs, said the work of the inquiry to date shows the commission "either incapable or unwilling to take

action against the growing gap between on-road emissions and those during the test.” And the work shows EU countries are “not very keen on very strict implementation and enforcement of car emission legislation,” Gerbrandy said.

Elzbieta Bienkowska, the EU industry commissioner, told the inquiry committee September 12 that she was considering legal action against EU countries that could force them to penalize automakers that exceeded exhaust emissions limits laid down in EU legislation.

18. Germany Goes To EU with Accusation of Fiat Emissions Cheating

Germany’s Transport Ministry has asked the European Commission to investigate exhaust emissions of Fiat Chrysler vehicles for potential illegal manipulation devices, according to German government documents.

Germany’s motor vehicle authority KBA began testing the vehicles of several manufacturers, including Fiat, after Volkswagen’s admission in September last year that it had cheated emissions tests with motor-management software.

The direct approach to the European Union executive comes after the German transport ministry raised concerns over Fiat vehicles with Italian authorities earlier this year and a subsequent rejection by Italian authorities of claims that Fiat and Chrysler vehicles used illegal exhaust manipulation devices.

The letter to the European Commission said that tests by German authorities on the Fiat 500X, Fiat Doblo and Jeep Renegade could prove the "illegal use of a device to switch off exhaust treatment systems" and urged the Commission to consult with Italian authorities to resolve the issue.

A Fiat spokeswoman told the press that the company’s cars conform to current emissions rules and do not contain defeat devices.

The Commission, meanwhile, said that it is the responsibility of the Italian authorities to remedy wrongdoings. "It is first and foremost a dialogue between the two member states concerned, with an obligation to keep the Commission informed and the possibility for the Commission to facilitate a solution if no agreement can be found," the Commission said in a statement.

The Italian infrastructure ministry, which includes the national motor vehicle authority, said Italy had not received any communication from the German government on the matter. Further, it said Italian tests had shown Fiat 500 cars conformed to emissions rules and did not contain defeat devices, adding that the KBA had never said it disagreed with Italy’s findings.

The KBA tested 53 different vehicles and found that carmakers were making liberal use of what they described as a “thermal window”. This refers to the time when carmakers are allowed to throttle back exhaust emissions management systems to protect engines from potential damage from condensation when cars are started in very cold conditions. During their investigations, the KBA found that a very wide range of temperatures was used by carmakers for thermal windows.

19. France to Seek Compensation from Carmakers Exceeding CO2 Goals

France may seek compensation from carmakers whose vehicles far exceed carbon dioxide (CO2) emissions targets in normal driving, budget Minister Christian Eckert said while addressing

lawmakers at the National Assembly. Eckert said government legal services were preparing action to recover "lost tax receipts" from carmakers whose vehicles should have incurred higher green penalties at the time of sale.

The diesel scandal, which broke a year ago when Volkswagen admitted cheating U.S. nitrogen oxide (NOx) emissions tests, prompted industry-wide investigations in France and other countries. Besides on-the-road NOx emissions far in excess of regulatory lab scores, the inquiries found gaps between claimed CO2 output and actual fuel efficiency for many car models. Under France's "bonus-malus" scheme, cars with lower CO2 emissions and fuel consumption benefit from sales subsidies funded by penalties on the sale of less economical vehicles, based on the amount CO2 emitted per kilometer.

"There will be no leniency nor particular severity," Eckert said on Wednesday. The budget minister also announced plans to shift green incentives from hybrids to pure-electric cars and begin phasing out fuel tax advantages for diesel-powered fleets.

20. Germany Moves to Approve Extended Tax Breaks for E-Cars

Germany is moving to extend corporate and consumer tax exemptions for the purchase of electric cars, part of a set of measures expanding prior incentives to aggressively boost its e-mobility program. In October, the upper house of Parliament, the Bundesrat, is expected to approve a bill extending tax exemptions for e-cars purchased between January 1, 2016, and December 31, 2020, from five to 10 years in an attempt to eliminate the cost-gap between combustion and electric-engine vehicles.

The bill, approved September 22 by the lower house of Parliament, the Bundestag, also redefines the scope of tax-exempt e-cars to include certain hybrid vehicles meeting emissions standards and those using fuel-cell technologies. Vehicles meeting electric standards that include parts used to re-outfit traditional, combustion-engine vehicles also qualify for exemptions.

The prior law set the period for tax exemptions as five years. In May, an e-mobility directive extended tax exemptions for newly purchased electric and hybrid cars to 10 years but didn't specify the period in which the exemptions would be in place. This new bill sets a time frame and also seeks to expand on the former provisions.

Furthermore, tax incentives would be offered to employers that install e-car infrastructure, such as charging stations, at their headquarters or outer branches. Recommendations from the Bundestag's finance committee also would be incorporated in the bill, including providing exemptions for employees who use company e-cars and charge them at work.

The approved temporary tax breaks, financial incentives and subsidies are part of a 1 billion euro (\$1.12 billion) package that the federal government originally proposed in its May 18 directive, according to the Ministry for Economic Affairs and Energy.

"The growth in the proportion of electric vehicles on roads is a key component in achieving an adequate reduction of CO2 emissions," the federal government said in its preamble to the bill.

The bill comes on the heels of federal investments for the research and development of electromobility and green technologies to help Germany reach its benchmark of reducing carbon emissions by 40 percent in 2020 compared to 1990 figures.

In May, the federal government issued a directive offering a 4,000 euro (\$4,500) subsidy for e-car buyers, and a 3,000 euro (\$3,360) subsidy for those opting for hybrids, for vehicles less than 60,000 euros (\$67,000).

The environmentally conscious transportation association Verkehrsclub Deutschland (VCD) sharply criticized the directive, calling it a “shotgun approach” that does not account for a vehicle’s energy efficiency. “Differentiated support would have been more expedient,” Gerd Lottsiepen, VCD’s transportation policy spokesman, said in a statement. “The lower a vehicle’s energy use, the higher a subsidy should be.”

The current bill seeks to significantly increase the number of e-cars on the road by 2020 as well, which until now has stagnated nationwide at below 1 percent. It also sparked controversy, however, for different reasons than the subsidy did.

“These tax provisions provided for the given instruments are extremely low when compared to subsidies for diesel fuel,” Christian Hochfeld, managing director of the Agora Verkehrswende, a green-transport think tank based in Berlin, said in a statement about the current tax breaks for e-cars.

Tax revenue losses associated with subsidies for diesel vehicles amount to about 7 billion euros (\$7.9 billion) annually, according to 2014 figures from the Federal Environment Agency. Under current legislation, the loss in tax revenue due to e-cars would amount to 20 million euros (\$22.5 million) annually for the year 2020, according to the bill’s projections.

Should the Bundesrat’s financial committee forgo making additional changes, the bill could be slated for a final vote in the Bundesrat October 14. If approved, it would become law after being signed by the federal president and come into force immediately.

21. VW Pins Its Hopes on Electric Car to Overcome Scandal

Volkswagen AG is laying out a bold plan to bring electric vehicles to the masses with dozens of new models and unprecedented driving ranges, challenging other manufacturers to keep pace a year after the emissions scandal rocked the German automaker.

The process got a boost at the Paris car show September 29, when VW unveiled a battery-powered hatchback concept car that boasts a range almost twice as far as Tesla Motors Inc.’s Model 3 sedan. Rather than an offshoot of an existing model in its portfolio, the car is VW’s first electric vehicle built around a unique platform, a major commitment in financial and engineering resources.

The stakes are high for Volkswagen to reboot the company, with the scandal bleeding billions in fines and absorbing senior management’s attention. To emphasize the importance of the new direction, VW is likening the hatchback to ground-breaking models such as the iconic Beetle, which put it on the map around the world and the Golf compact that propelled the manufacturer to the top of the European auto industry in the 1980s.

The September 2015 revelation of diesel-emissions manipulation forced VW to change course. The emphasis is now on new technologies such as battery power and autonomous driving rather than the diesel engines that it pushed in the U.S., where the cheating was uncovered. With that technology besmirched, diesel cars accounted for 46.8 percent of German auto sales in the first eight months of 2016, the lowest level since 2012.

Instead, Volkswagen plans to bring out 30 battery-powered cars by 2025, with the Audi luxury division targeting three by 2020. The strategy, the most aggressive in the industry, includes a target of selling as many as 3 million electric autos a year. That would be about 25 percent of its global sales, whereas IHS Markit estimates battery-powered vehicles will account for just 3 percent of worldwide demand by then.

The push at Volkswagen is part of the industry's response to ever-tightening pollution standards. The European Union is seeking efficiency improvements in the next five years that would effectively be double the gains made since 2010. With the future of diesel technology compromised due to the Volkswagen scandal, manufacturers are now seeking to lure consumers to electric cars, which until now have failed to win wide popularity.

Among battery-powered models currently available from top carmakers, BMW AG's i3, Renault SA's Zoe and Nissan Motor Co.'s top-selling Leaf were designed from the outset as all-electric vehicles. Otherwise, manufacturers have depended on established models as the basis of electric versions, such as the van-like Mercedes B-Class and VW's Golf and Up! city car, to hold back costs amid uncertain demand.

The German manufacturer will have to balance investments in the electric lineup with the growing cost of the emissions cheating. So far, Volkswagen has set aside 17.8 billion euros (\$20 billion) for resolving the scandal, and Chief Financial Officer Frank Witter said in an interview that strict financial discipline will be needed. Investors are suing for billions of euros in Germany, and U.S. authorities are considering the size of a potential criminal fine.

22. Poland Plans for 1 Million Electric Cars by 2025

Poland, which had fewer than 1,000 electric cars on its roads last year, wants to create a base to support construction of a million electric vehicles within a decade, according to a government official. "There will be 1 million electric cars in Poland by 2025," Deputy Energy Minister Michal Kurtyka said at a September 21 news conference. "It is a realistic plan."

Polish companies, in addition to foreign automakers, will be invited to design and produce the cars. "We expect to have 75,000 [electric] cars in 2020," Kurtyka said. Poland has about 23 million vehicles on its roads today, predominantly gasoline or diesel models.

The government is deciding on special incentives such as free parking or value-added tax exemptions for electric car buyers. "It will require negotiations with the European Union, which does not use a zero VAT for car buyers," Kurtyka said. The plan will likely be implemented in stages starting this year, Kurtyka said.

But more than 80 percent of Poland's electricity is generated by coal, and environmental organizations Greenpeace, Friends of the Earth, and Transport & Environment said mass production of electrical cars in Poland will do little to improve air quality as long as coal is the predominant source of power.

23. Sweden Budgets \$1.5 Billion for Emissions Cuts, Green Projects

Strong growth and increased tax revenues will allow Sweden to invest almost 13 billion kroner (\$1.5 billion) in emissions reduction projects and green incentives over four years, the government

announced in its 2017 budget plan. The plan includes new funding to buy and cancel out emissions allowances in addition to a range of initiatives to adopt climate-friendly technologies.

It also includes measures to provide tax breaks for low-emission vehicles, increase allocations to develop fossil fuel-free transport and renewable energy, establish a value-added tax-free solar energy micro market, and impose a levy on three common flame retardants found in electrical goods.

Presented on September 20, the budget will fund grants and other incentives for companies choosing to switch to green technologies and use low-emissions vehicles, the government said. Incentives will total 1.6 billion kroner (\$187 million) for the 2017–2020 period, the government said. In addition, a law introducing new point-of-sale tax breaks for low-emissions vehicles will take effect January 1, 2018, it said.

Originally announced in July, the plan to buy and then scrap emissions allowances under the European Union's emissions trading system will earmark 300 million kroner (\$35 million) for purchases each year between 2018 and 2040. Incentives for individuals include a plan to allow private households to sell surplus energy derived from solar panels without having to register for VAT, and new tax breaks related to repairs of household products.

24. Transport Scoreboard Highlights Slow Progress on Low-Emission Mobility

Data published in the European Commission's Transport Scoreboard 2016 recently shows that the number of new cars powered by alternative fuels like bio-diesel or electricity has risen. However, progress to improve the sustainability of transport remains slow, with Violeta Bulc, commissioner for transport, explaining that the scoreboard "serves as a road sign... to identify where we do well and where further investment and actions are needed".

And the scoreboard makes clear which member states are leading the way and which have more work to do.

Finland topped the ranking for 'the share of renewable energy in transport fuel consumption'. It had increased its share to 21.6% in 2014, up from 9.6% the year before. Sweden, which held the top spot in this category in 2013 with a 17% share, had been knocked into second place in 2014 with 19.2%. Austria was third with 8.9%, followed by France with 7.8% and Hungary and Slovakia both with 6.9%.

At the other end of the scoreboard were Estonia with a 0.2% share, Spain with 0.5%, Greece 1.4%, Croatia 2.1% and Slovenia 2.6%.

Spain may be able to lift itself out of the bottom rankings in future years after nine of the country's largest cities signed an agreement in September to cut transport emissions by half by 2030. The plan to achieve this involves promoting electric vehicles and increasing charges on the most polluting forms of transport.

Italy topped the board for the most new passenger vehicles using alternative fuels in 2015 with 12.8% of all newly registered cars. Interestingly, the percentage has decreased from 2014 when it was 16.08%. However, the Commission said that the 2015 data for this category was provisional. In this category, the Netherlands was in second position with 12.59%, followed by Denmark with 8.28%, Sweden on 4.4% and the Czech Republic with 1.93%.

Cyprus languished at the bottom of the table with zero, joined in the lower rankings by Malta with 0.04%, Luxembourg 0.19%, Lithuania 0.33% and Latvia and Hungary both with 0.43%.

Numbers of charging points for electric vehicles had also increased with the Netherlands occupying the top spot in 2015 with 145.4 per 100.000 city inhabitants. It was followed by Denmark with 111.3, Austria 98.7, Ireland 64.2, and Finland 55.4.

The Commission adopted its European Strategy for low-emission mobility in July 2016.

25. Oslo's "Climate Budget" Aims To Halve Carbon Emissions in Four Years

Oslo's city government issued its first "climate budget" recently aiming to halve greenhouse gas emission within four years in one of the world's most radical experiments to slow global warming. The budget, setting out annual goals to choke off emissions from cars, homes and businesses in the Norwegian capital, adds to a scheme announced last year to ban private cars from the city center.

"We'll count carbon dioxide the same way as we count money," Vice Mayor Robert Steen told reporters of the targets for halving emissions by 2020.

Left-wing parties, led by Steen's Labor Party, won a majority in the city council in 2015 for a four-year term and have set about using wide powers to re-design the capital of a nation run by a right-wing government.

Under the new plan, Oslo will raise tolls for cars to enter the city, cut parking spaces, phase out fossil-fuel heating in homes and offices by 2020, shift the bus fleet to renewable energy and build ever more bicycle lanes.

Seth Schultz, of the C40 Cities organization in New York which groups 86 cities working to address climate change, said he did not know of such a radical plan by any other major city. "Integrating carbon into the financial budget is new," he said.

The Oslo council agreed earlier this year to halve emissions from Oslo to 600,000 tons of carbon dioxide in 2020 from 1.2 million in 1990, and even more steeply from current levels around 1.4 million. It also aims for net zero emissions by 2030.

The new climate budget outlines how. Even if the plan falls short, Steen said it will be worth the effort to highlight the risks of climate change such as heat waves and rising seas.

Glen Peters, of the Center for International Climate and Environmental Research in Oslo, said the projected cuts would be unprecedented. "It will be a stretch," he said. No country had cut emissions by more than about five percent a year, a rate achieved by France when it shifted to nuclear power from fossil fuels in the 1970s, he said.

Governments in rich countries project it will take decades to halve national emissions, which are a larger task than a city faces.

Parts of Oslo's plan also depend on funds from the national government. Oslo has been experimenting with capturing carbon from an incinerator burning municipal waste, but a full-scale project might cost 2 billion Norwegian crowns (\$246 million).

26. Norway Plans Higher Car Emissions Tax in 2017

Norway plans to increase the tax rate for motor vehicles that exceed certain carbon dioxide and nitrogen oxide limits next year as part of its 2017 budget. The proposed budget presented to Parliament on October 6th also includes a hike in road-use fees, but a reduction in annual motor vehicle taxes and road tolls. Other measures include forming a state-owned company to invest in emissions-reduction technologies in partnership with the private sector. Funding for a full-scale carbon capture and storage demonstration plant also would be extended beyond August 2017. Parliament is reviewing the budget and will vote on it by the end of the year. Most of the measures are expected to take effect January 1, 2017.

27. Electric Vehicles and the Energy Sector – Key to Europe’s Future Emissions

A fundamental change within the road transport sector is required if Europe wants to achieve its objective of a long-term transition to a low-carbon European economy according to the European Environment Agency (EEA). Electric vehicles charged with electricity from renewable sources can reduce future emissions of greenhouse gases and air pollutants from road transport. This summary (based on an assessment¹ carried out on behalf of the EEA) presents the key implications for emissions and Europe’s energy system arising from the potential wide-scale use of electric cars in 2050. The main messages of the assessment are:

- Electric vehicles powered by renewable energy sources can play an important role in EU plans to:
 - move towards a decarbonized transport system;
 - meet its goal to reduce greenhouse gas (GHG) emissions by 80-95 % by 2050.
- The growth in electric vehicle use will result in extra electricity energy demand in the European Union (EU-28): Europe’s total electricity consumption by electric vehicles will increase from approximately 0.03 % in 2014 to 9.5 % in 2050.
- An increase in electric vehicle use will result in:
 - lower CO₂ and air pollutant emissions from the road transport sector itself;
 - higher emissions from associated electricity production;
 - an overall net benefit in terms of lower emissions of carbon dioxide (CO₂) and the air pollutants nitrogen oxides (NO_x) and particulate matter (PM);
 - an overall increase in sulfur dioxide (SO₂) due to emissions from the electricity-generating sector.

Despite previous technological improvements, the transport sector contributes around one quarter of Europe’s GHG emissions. Emissions from road vehicles also contribute to high concentrations of air pollutants in many European cities, which often don’t meet air quality standards set by the EU and the World Health Organization (WHO).

The potential of renewable energy sources to power electric vehicles can contribute to a considerable decarbonization of the future road transport sector and improved resource efficiency. It also has associated co-benefits in terms of reduced air pollution. However, the extent to which this may occur varies greatly by country, in terms of how the demand for additional electricity for electric vehicles can be accommodated.

¹ Electric mobility in Europe — Future impact on the emissions and the energy system, Oeko-Institut and Transport & Mobility Leuven (TML), 2016, and EU energy, transport and GHG emissions: Trends to 2050, 'PRIMES model for energy and CO₂ emission projections, Reference scenario 2013', European Commission, Directorate-General for Energy, Directorate-General for Climate Action and Directorate-General for Mobility and Transport, 2013.

The assessment commissioned by the EEA explored the future impacts of greater electric vehicle use upon the EU-28's energy system, and associated emissions from the road transport and energy sectors. Two scenarios were explored:

1. the share of electric vehicles as part of the entire EU-28 car fleet in 2050 was assumed to be 50% (on average);
2. the share of electric vehicles in 2050 was assumed to be 80%.

The resulting changes in energy demand and CO₂ and selected air pollutant emissions were quantified. They were then compared with a European Commission 'reference' projection, which assumes that only 8% of Europe's car fleet would be electric in 2050. Other sectors and their potential future reductions in energy demand were not taken into account.

Additional electricity generation will be required in the European Union to meet the extra energy demand arising from an 80% share of electric vehicles in 2050. The share of Europe's total electricity consumption from electric vehicles will increase from approximately 0.03% in 2014 to around 4-5% by 2030 and 9.5% by 2050.

The additional electricity demand due to the high rates of electric vehicle ownership assumed for the future will need to be met by additional power generation. Furthermore, this additional energy needs to be integrated into the grid infrastructure across Europe. Critical questions are therefore how much electricity is needed, what type of generation is used to cover this additional electricity demand and how are charging peaks managed?

Until 2030, the additional energy demand by electric vehicles will be limited and will not significantly influence the electricity system. But, in the longer term, with high market shares of electric vehicles assumed in 2050, the required electricity demand will have more significant impact on power systems in Europe.

The share of electricity consumption required by an 80% share of electric vehicles in 2050 will vary between 3% and 25% of total electricity demand across the EU-28 Member States, depending upon the number of electric vehicles anticipated in each country. On average, for the EU-28, the proportion of total electricity demand required in 2050 is 9.5%, compared with the 1.3% assumed in the European Commission's projection. Overall, an additional electrical capacity of 150 GW will be needed to charge electric cars.

The integration of the additional energy demand caused by electric vehicles poses challenges for the management of power systems at local, national and European levels.

High shares of electric vehicles will require significant additional electricity generation which, in the absence of coordinated investment, may put stress on electricity infrastructure. Even between countries with a similar share of renewable energy, management strategies to accommodate the charging of a large number of electric vehicles can be very different, depending on the types of renewable energy and conventional power generation in each country. In countries with highly fluctuating renewable energy supplies, coordinating the energy demand from electric vehicles may become a major challenge.

It is clear, for example, that countries with high solar energy generation capacity, for which the preferred charging peak will be during the day, will need to apply different grid and power management strategies from countries that have only wind, or combined solar and wind electricity

production. In regions with a weak network infrastructure, additional grid reinforcement or implementation of specific 'smart charging' approaches might be required to ensure an efficient and flexible electricity generation and distribution infrastructure.

Increasing the numbers of electric vehicles can significantly reduce direct emissions of CO₂ and air pollutants from road transport. However, these positive effects are partially offset by additional emissions caused by the additional electricity required and continued fossil fuel use in the power sector projection in 2050.

An 80% share of electric vehicles in the 2050 passenger road transport fleet will result in lower emissions of both CO₂ and air pollutants from the road transport sector itself. However, higher emissions would result from the associated fossil fuel combustion in the electricity-generating sector if reductions in electricity demand are not made in other sectors, e.g. by energy efficiency improvements.

Overall, the avoided CO₂ emissions in the road transport sector outweigh the higher emissions from electricity generation. In the EU-28, a net reduction of 255 Mt CO₂ could be delivered in 2050, an amount equivalent to around 10% of the total emissions from all sectors for that year, according to the European Commission projection. In countries with high shares of fossil fuel power plants, electric vehicle demand could, however, lead to higher CO₂ emissions. The environmental benefit of electric vehicles in these instances would therefore not be fully realized.

For air pollutants, an 80% share of electric vehicles in 2050 will significantly reduce direct exhaust emissions of NO_x, PM and SO₂ from road transport, for each pollutant by more than 80% in comparison with 2010 levels. However, as with CO₂, the overall reduction for NO_x and PM will to some degree be offset by additional emissions coming from the electricity-generating sector — by 1% for NO_x and 3% for PM₁₀ (particulate matter with a diameter of 10 µm or less). The situation is different for SO₂. The already relatively low SO₂ emissions from road transport, coupled with the use of coal in power generation, will result in additional SO₂ emissions, which exceed the reduction made in the road transport sector by a factor of 5. Additional abatement of the higher SO₂ emissions would be required.

The difference in emissions of air pollutants from the road transport sector and electricity generation cannot be compared directly in terms of their respective impacts on human health. Their impact depends to a large degree on the location, intensity and type of emission sources. Emissions from road transport occur at ground level and generally in areas where people live and work, such as in cities and towns, so much of the population is exposed to them. In contrast, power stations are generally outside cities, in less populated areas. As a result of this lower exposure, a shift of emissions from the road transport sector to the power generation sector can therefore be beneficial for health.

A large share of electric vehicles on Europe's roads in the future will have implications for the electricity generation and distribution infrastructure. Integrating the additional electricity demand poses diverse challenges. It is important that the road transport and energy sectors become more closely coupled, and that policy and investment decisions across both sectors are closely integrated.

28. EU Airline Pollution Curbs Stay Up In the Air Until Next Year

A European Union decision on whether to include international flights in its scheme to curb airline pollution will not come until next year at the earliest after the bloc's executive has assessed a

global deal which was recently approved. (See story below.) International flights have been exempted from the EU's emissions trading system (ETS) since 2013 in an effort to avoid a trade war and give the International Civil Aviation Organization (ICAO) time to craft its agreement.

Europe wants a tougher regime than that agreed by ICAO members, and has reserved the right to impose its own rules rather than adopting the ICAO measures. "The Commission will early next year present a review to the European Parliament and the (European) Council on the outcome we reached at ICAO before deciding on the next steps," Henrik Hololei, director general of the European Commission's transport department, told a parliamentary committee.

While the EU exemption automatically runs out at the end of the year, airlines will only have to surrender carbon emissions allowances in the first quarter of 2018, meaning the EU has until then to reach a final decision.

Hololei did not say whether the ICAO deal justified extending the exemption. Any Commission proposal has to be agreed by the European Parliament and member states in the European Council. "The Commission will thoroughly assess the (ICAO) resolution and consider what action to take with respect to the EU ETS," he told EU lawmakers in the transport committee. "Of course I would have wanted it to be more ambitious."

After the deal was announced Alexandre de Juniac, Director General and chief executive of the International Air Transport Association (IATA) said that it "ensures that the aviation industry's economic and social contributions are matched with cutting-edge efforts on sustainability."

29. JRC Concludes EU Achieves 2020 Energy Efficiency Target Early

The EU has already met its 2020 energy efficiency target set under the European Energy Efficiency Directive, according to the latest figures. The EU's final energy consumption fell by 6.35% between 2000 and 2014 – from 1,133 million tons of oil equivalent (Mtoe) in 2000 to 1,061 Mtoe in 2014 – according to a report published by the European Commission's Joint Research Centre (JRC).

This is 25 Mtoe below the 1,086 Mtoe target set under the Energy Efficiency Directive. The total saving achieved by the EU28 during this timeframe, 72 Mtoe, is equivalent to Finland's entire energy consumption during 2014, the JRC said.

However the fall in final energy consumption – the total energy consumed by end users – has not been gradual, and may be largely due to a fall in economic activity rather than national efforts to curb energy use, the findings suggested.

Until 2010, consumption rose every year compared to 2000 (2009 being an exception), remained relatively constant from 2011-13, before dropping by 4% in 2014. The economic downturn is one factor likely to have accounted for this reduction.

The study monitored energy consumption trends from 2000-14 across four main energy-consuming sectors in the EU: residential, tertiary (services), transport and industry. It found that final energy consumption fell most in industry (-17.62%), followed by a significant reduction (-9.52%) in the residential sector. However energy use in the transport sector has increased (+2.21%). Transport accounted for one-third (33.22%) of consumption in 2014, followed by industry (25.89%), residential (24.80%) and tertiary (13.31%).

“Road transport, especially passenger cars, represents the main consuming transport subsector,” the JRC stated. “Two other subsectors which have registered a rise in their consumption in comparison to 2000 are pipeline transport (+192.4%) and international aviation (+14.8%).”

The results also show that biofuels, especially biodiesels, have developed at a rapid pace from 2000 to 2014. “Their contribution in the energy mix has increased by 3.8%, reaching a 4.01% share in 2014,” the JRC said.

Across the EU28 member states, final energy consumption varied considerably. Greece was the best performer, reducing consumption by 16.6%, followed by the UK (-15.3%) and Portugal (-11.8%). In contrast, Lithuania (28.2%), Malta (22.9%) and Latvia (19.4%) increased their energy consumption the most.

The analysis also showed that four member states – Germany, France, the UK and Italy – accounted for more than half of Europe’s final energy consumption.

NORTH AMERICA

30. California Restricts Pollutants from Cow Flatulence to Diesel Emissions

California has moved to restrict air pollutants from sources as diverse as diesel trucks and cow flatulence, the latest of several efforts in the most populous U.S. state to reduce emissions leading to climate change.

Under a bill signed recently by Democratic Governor Jerry Brown, the state will cut emissions of methane from dairy cows and other animals by 40 percent and black carbon from diesel trucks and other sources by 50 percent. The bill also mandates the state to reduce emissions of fluorinated gases, or hydrofluorocarbons used in refrigeration.

The measure comes on the heels of several climate-change bills signed in recent weeks by Brown, including one that by 2030 will mandate an overall reduction of greenhouse gas emissions to 40 percent below the level released in 1990.

"We're protecting people's lungs, their health by cutting out a poisonous chemical that comes out of diesel trucks," Brown said at a signing ceremony in the Los Angeles suburb of Long Beach, where trucks at the nation's largest port complex spew particulate matter, including black carbon, along clogged freeways, contributing to high rates of asthma and other conditions in some of the region's poorest areas.

"It goes from some machine, into the air and into your lungs," Brown said.

The pollutants targeted in the bill differ from carbon dioxide and other pollutants associated with global warming in that they remain in the atmosphere a relatively short time. However, these emissions have heat-trapping effects, so reducing their presence can help fight climate change, Brown said.

In addition to black carbon, which comes from trucks as well as the burning of organic material and other sources, the bill also requires reductions in hydrofluorocarbons, used in refrigeration and to power aerosol products.

It would also require the state's dairy industry, which produces 20 percent of the country's milk, to find a way to reduce methane produced by cow flatulence and manure. One technology for doing that is known as a methane digester, which turns the gas into usable fuel. Such equipment is expensive, however, which worries the state's dairy farmers.

"This mandated 40 percent reduction in methane and 50 percent reduction in anthropogenic black carbon gas represents a direct assault on California's dairy industry and will hurt manufacturing," a small-business group, the National Federation of Independent Businesses, said in a news release.

But Brown said the mandates will lead the state to develop better technology and boost the economy.

31. Veteran Volkswagen Engineer Charged in U.S. Emissions Probe

A veteran Volkswagen AG engineer pleaded guilty to conspiring to defraud U.S. regulators and customers, the first criminal charge in the Justice Department's year-long investigation into the company's rigging of federal air-pollution tests. The engineer, James Liang, is cooperating with the investigation, increasing pressure on higher-ranking officials of the company.

Liang worked at Volkswagen for decades, beginning in Germany and then moving to the U.S. in 2008 -- two years after the government says the conspiracy began. He appeared in court with a translator. He admitted to a charge of conspiracy to commit fraud against U.S. regulators and customers. He faces a maximum penalty of five years in prison.

Liang was one of the engineers at Volkswagen in Wolfsburg, Germany, who was directly involved in the development of the defeat device for the Jetta in 2006, according to a lawsuit filed in July by New York Attorney General Eric Schneiderman. In 2014 and 2015, he was conducting tests at the company's Oxnard, California, facility as part of Volkswagen's effort to conceal from regulators that the defeat devices were responsible for the illegal emissions, according to the New York complaint.

Although the company has already agreed to settlements that may total \$16.5 billion to get 482,000 emissions-cheating diesel cars off U.S. roads., the U.S. is continuing its criminal inquiry into the company's manipulation of emissions systems.

Settlement talks in the criminal matter against the company could be resolved by the end of the year, according to two people familiar with the matter. Germany and South Korea are also conducting criminal probes of the company.

After VW admitted last September that it had systematically rigged environmental tests since 2009, it suspended several engineers for their involvement in the scheme. They included several managers whom an internal investigation found had turned a blind eye to the effort.

The Justice Department a year ago put in place a policy requiring that all corporate cases include a plan to charge individuals -- a policy that came amid criticism that company officials weren't being held accountable even as the businesses paid billions of dollars in fines. The department has said companies that want credit for cooperating with investigators must name individuals whom they consider responsible for any misconduct.

In its statement about Liang's plea and unsealed indictment, the Justice Department provided the most detailed narrative to date about the origins of VW's diesel emissions violations.

From the fall of 2006 through September 2015, "Liang and his co-conspirators, including current and former employees, and others, agreed to defraud the U.S. and VW customers, and violate the Clean Air Act, by misleading the U.S. and VW customers about whether VW diesel motors complied with U.S. emissions standards," prosecutors said in the indictment.

According to the documents, Liang was on the team that developed the EA 189 2.0-liter diesel at the center of VW's emissions scandal. Liang, a VW employee since 1983, began working on the EA189 engine in 2006 while at Volkswagen's diesel engine development department at the automaker's headquarters in Wolfsburg, Germany.

Liang and "co-conspirators" working on the engine soon realized it would not meet stricter U.S. limits on nitrogen oxide emissions that took effect in 2007 while also attracting "sufficient customer demand," Liang's indictment said.

In turn, Liang and his co-conspirators developed and installed the "defeat device" software to cheat on U.S. emissions tests, the indictment said. The software recognizes when a vehicle is undergoing lab testing and limits nitrogen oxide emissions to artificially-low levels in order comply with U.S. standards.

The software would eventually be used on all of the nearly 500,000 2.0-liter diesel engines sold by VW in the U.S. market from 2009-2015, the Justice Department said.

Liang moved to the United States in 2008 to help launch the new "clean diesel" engine in the U.S. market and was VW's "Leader of Diesel Compliance" while working at the company's testing facility in Oxnard, Calif., west of Los Angeles, prosecutors said.

Liang admitted to attending meetings between personnel from VW AG and its U.S. operation and officials from the EPA and California's Air Resources Board for certifications from the regulators to sell the diesels in the U.S. market, the Justice Department said. In those meetings, VW personnel hid the existence of the defeat device software and claimed that the diesels complied with U.S. emissions standards, the government said in its statement.

VW continued to "falsely and fraudulently certify to EPA and CARB" that VW's diesel vehicles complied with U.S. emissions standards and the Clean Air Act, the Justice Department said.

Liang also admitted that he and others at VW falsely marketed the 2.0-liter diesel engines as "clean diesel" and environmentally-friendly, the government said.

As part of his guilty plea, Liang admitted to helping "his co-conspirators continue to lie to the EPA, CARB and VW customers even after the regulatory agencies started raising questions," the Justice Department said.

32. Volkswagen and Navistar Working Closely on Diesel Technology

Navistar International Inc. announced a strategic alliance with the truck and bus division of Volkswagen that included an unspecified equity investment by the German automaker and framework agreements for strategic technology and supply collaboration and a procurement joint

venture. Volkswagen will acquire 16.2 million shares of newly issued Navistar stock for \$256 million in cash.

The amount of stock VW is acquiring is roughly equal to the percentage (19.9%) held by activist investor Carl Icahn on a pre-transaction basis. After the new stock has been issued, VW's stake will amount to 16.6% of outstanding undiluted shares. Presumably Icahn's share will experience similar dilution.

What the two companies have in common are failures in developing technology to clean up diesel engine emissions. In 2012 Navistar finally gave up on coming up with its own clean-diesel technology and fired the CEO who had led the company down that path for nearly a decade.

Navistar began sourcing engines for its trucks from Cummins Inc. in 2012 and continues to do so. In July, Navistar recalled nearly 1,200 big rigs to repair a defect in the engines. Cummins has had its own problems with demand, but this is not good news for the company and the stock was down nearly 6% in late morning trading.

Volkswagen's own troubles with clean diesel engines is far worse, of course, magnified by the number of vehicles sold and the lies the company told to sell those millions of cars. But VW acquired Germany's MAN and Sweden's Scania, both well-known commercial vehicle makers.

It is ironic that Navistar's diesel truck business may be saved by a Volkswagen diesel engine, but that could happen.

Another thing that could happen is that VW would buy all of Navistar. According to a report morning from Reuters, VW's truck division CEO answered a question regarding a full merger with Navistar this way: "On our way to becoming a global champion all options are open."

The North American market for Class 8 trucks (the 18-wheelers we see on U.S. roads and highways) is in a funk. According to industry analyst firm FTR, July orders netted out at just 10,400, down 56% year over year. The annualized order rate is now down to 210,000, well below a March estimate that 2016 net orders would total 250,000, a number 25% lower than 2015 net orders.

33. Judge Hears Objections to VW Emissions Deal; Subsequently Approves It

A federal judge in San Francisco stated he was strongly inclined to approve a record-setting \$10.033 billion proposed buyback and settlement deal from Volkswagen for 475,000 owners of contaminating 2.0-liter diesel automobiles but would hear objections before making his final decision.

Breyer said he wants to consider objections to determine whether to recommend any changes and will issue a final ruling by October 25.

"We got played the fool", Mark Dietrich, an Audi owner from San Francisco, told the judge earlier at a hearing in San Francisco. He was speaking at a hearing in San Francisco, in which lawyers and some VW owners argued that the deal didn't go far enough, and that the money offered would not cover expenses such as extended warranties, maintenance and government licensing fees.

The maker will also spend \$US2.7 billion to support environmental projects, with an additional \$US2 billion earmarked for research on reducing emissions. The combined \$14.7 billion deal

would be the largest auto-scandal settlement in US history. "It's good for the environment, and it's a way for Volkswagen to regain the trust of its customers, the American people, and regulators and do right by the environment".

But Blair Stewart, a Volkswagen owner from Palo Alto, said the company engaged in a "program of deception" that should not go unpunished.

VW reached the settlement covering the 2.0-liter engines in June with consumers and regulators including the U.S. Environmental Protection Agency. Volkswagen and regulators still have to come up with a solution for 85,000 cars with 3.0-litre engines, which allegedly also have illegal software to cheat on emissions tests.

Volkswagen lawyer Robert Giuffra defended the settlement, saying the goal was a deal that was "efficient and made sense". "This settlement is something that I think is very good for consumers", he said.

On October 25th, as promised, the federal judge announced his decision and approved Volkswagen's \$14.7 billion settlement with regulators and owners of 475,000 polluting diesel vehicles, and the German automaker said it would begin buying back the vehicles in mid-November.

34. Audi to Buy Back 25,000 Diesel Q7 Models in U.S.

Volkswagen's premium division Audi will buy back 25,000 diesel engined cars in the United States to compensate owners whose cars do not meet exhaust emission standards, German weekly Der Spiegel has reported.

Audi representatives are in talks with U.S. authorities about fixing 85,000 cars which failed exhaust tests.

Preliminary discussions have revealed that around 25,000 older generation cars cannot be fixed and need to be bought back by the German carmaker, Der Spiegel said.

35. EPA to Shut Down 2 Chicago Vehicle Emissions Test Facilities

The Illinois Environmental Protection Agency will close two vehicle emissions testing facilities in Chicago, leaving motorists without a single testing center within city limits starting November 1. The decision comes as a result of a new testing contract that aims to cut costs.

Test sites at 1850 W. Webster Ave. in Bucktown and 6959 W. Forest Preserve Drive in Harwood Heights will shutter by the end of the month. The EPA also announced the closure of suburban facilities in Elk Grove Village and Tinley Park.

Kim Biggs, a spokeswoman for the Illinois EPA, says motorists will not have to travel more than 12 miles to reach a testing station, which is required by state statute. In a press release, the EPA says Chicago-area drivers will have to commute an additional four miles, on average, starting in November.

"Motorists may have a different drive, but this new contract will provide significant cost savings in Illinois," Biggs said.

The contract will save Illinois taxpayers around \$11 million per year and an estimated \$100 million over the next 10 years, according to the Illinois EPA. The move also includes measures that are designed to increase efficiency: Testing centers will have extended hours on Saturdays and each location (with the exception of the site in Schaumburg) will be equipped with high-capacity, two-lane facilities to help accommodate the expected increase in demand. Motorists will also be able to request extensions or exemptions from the testing requirement online.

Despite the savings, opponents fear the Chicago closures will create a burden on motorists in the state's largest city. Howard Learner, executive director of the Chicago-based Environmental Law and Policy Center, says the decision is "tone deaf and defies common sense."

"This testing program is important towards improving clean air, but now it will be harder for people to comply with the law and make their cars run cleaner," said Learner. "This imposes an unnecessary barrier for 3 million Chicagoans who will now have to drive to the suburbs to get their car tested."

Henry Henderson, Midwest director for the Natural Resources Defense Council, says the move is a step backward in combatting the city's air pollution problem.

"Chicago has a long history of air quality problems and this won't help because our cars have progressively become the biggest source of pollutants that cause the ozone pollution that sparks asthma and other health problems," Henderson said in an email. "The closure potentially means more miles driven and less attention given to the dirtiest cars in town—that is bad for our health and our economy."

Since the federal Clean Air Act amendments of 1990, Chicago and other major metropolitan areas around the country that do not meet federal air quality standards are required to implement vehicle emissions testing programs. Most new cars—those from 1996 or later—require an emissions test after they are four years old.

36. U.S. Says Glencore Unit to Pay Record \$27 Million for Biofuels Compliance

Glencore Plc's bunker fuel unit has agreed to pay a \$27-million penalty and retire over \$71 million worth of credits for compliance with the U.S. biofuels program to resolve charges it violated the policy, the U.S. government has announced. The U.S. Department of Justice and the Environmental Protection Agency (EPA) alleged that Chemoil Corp exported at least 48.5 million gallons of biodiesel from the United States from 2011 to 2013 but failed to retire the associated renewable identification numbers generated for the exported fuel.

In addition to paying the highest-ever civil penalty in such a case, Chemoil will have to retire some 65 million renewable fuel credits in the settlement, the Justice Department said. It has already retired 7.7 million.

The credits are used by oil refiners and gasoline importers to prove they are meeting government mandates for use of ethanol and biodiesel in gasoline and diesel.

The removal of millions of the credits, known as Renewable Identification Numbers (RINs), from the market will likely stoke mounting worries over tightening inventories of the credits. Oil refiners and others have said that prices of credits are soaring in response to the U.S. government's plan to boost renewable fuel mandates next year.

Prices of renewable fuel (D6) credits for 2016 compliance traded as high as 90 cents apiece following the news, then eased back to 88 to 89 cents each. That was little-changed from 87.75-88.75 cents previously, brokers said.

The biomass-based diesel (D4) credits for current year traded up to \$1.02 apiece, up from a range of 99.75 cents to \$1.005 each previously, they said.

The RIN market has been rife with fraud in previous years, and the U.S. government has settled a number of cases of past fraud in recent months.

37. EPA Releases National Assessment of Strategies to Reduce Air Pollution At Ports

An EPA report finds that air pollution at the nation's ports can be reduced significantly at all port types and sizes through a variety of strategies and cleaner technologies. Implementing these approaches, the report finds, would reduce greenhouse gas and other harmful emissions from diesel-powered ships, trucks and other port equipment.

“The National Port Strategy Assessment: Reducing Air Pollution and Greenhouse Gases at U.S. Ports” examines current and future emission trends from diesel engines in port areas, and explores the emissions reduction potential of strategies like replacing and repowering older, dirtier vehicles and engines and deploying zero emissions technologies.

“This report shows that there are many opportunities to reduce harmful pollution at ports that we know will work,” said Christopher Grundler, director of EPA's Office of Transportation and Air Quality. “This is great news for the roughly 39 million Americans who live and breathe near these centers of commerce.”

U.S. ports are set to expand significantly as international trade continues to grow, and the size of ships coming to ports increases. This growth means more diesel engines at ports emitting carbon dioxide that contributes to climate change. These engines also emit fine particulate matter, nitrogen oxides, and other pollutants that contribute to serious health problems including heart and lung disease, respiratory illness, and premature mortality. Children, older Americans, outdoor workers and individuals with respiratory and heart conditions can be especially vulnerable. Many ports are located in areas with a high percentage of low-income and minority populations, who bear the burden of higher exposure to diesel emissions.

Accelerating retirement of older port vehicles and equipment and replacing them with the cleanest technology will reduce emissions and increase public health benefits. For example, the report found replacing older drayage trucks with newer, cleaner diesel trucks can reduce NOx emissions by up to 48 percent, and particulate matter emissions by up to 62 percent, in 2020 when compared to continuing business as usual. In 2030, adding plug-in hybrid electric vehicles to these fleets could yield even more NOx and PM2.5 relative reductions from drayage trucks.

The new assessment supports EPA's Ports Initiative's goals to reduce air pollution and greenhouse gases, to achieve environmental sustainability for ports, and improve air quality for all Americans working in and living near our nation's ports. Through this initiative, EPA is engaging a wide range of stakeholders including ports and port operators, communities, tribes, state and local governments, industry, and other technical and policy stakeholders. EPA developed this national scale assessment based on a representative sample of seaports, and the results could

also inform decisions at other seaports, Great Lakes and inland river ports, and other freight and passenger facilities with similar profiles.

EPA's regulations are already reducing port-related diesel emissions from trucks, locomotives, cargo handling equipment and ships. For example, the North American and U.S. Caribbean Sea Emissions Control Areas require lower sulfur fuel to be used for large ocean-going vessels. This requirement has reduced fuel-based particulate-matter emissions from these vessels by about 90 percent. In addition, some port areas are already applying the emission reduction strategies assessed in the report. The emissions reduction strategies assessed in the report would make a significant difference in reaching the nation's air quality goals, and would help reduce emissions of the greenhouse gases that contribute to climate change.

38. Port Of Oakland Touts Reduction of Diesel Emissions

Diesel emissions at the Port of Oakland have declined dramatically since 2005, the result of a concerted effort by the port to improve air quality in neighboring communities, port officials said. From 2005 to 2015, diesel emissions from trucks, ships, tugboats, trains and cargo handling equipment declined 76 percent, from 261 tons to 63 tons annually, according to the port's 2015 Emissions Inventory report.

The reductions are part of the port's effort to reduce overall diesel emissions 85 percent by 2020.

The key factors that led to the improved air quality include a program to upgrade and replace old trucks that pick up and drop off cargo at the port, a ban on trucks that don't meet California emissions standards, a requirement that ships switch to cleaner burning fuel within 200 nautical miles of the port, a switch from diesel generators to electric power for refrigerated shipping containers inside the port and a requirement that berthed ships plug into dockside electrical power instead of running their diesel engines.

As a result, truck emissions are down 98 percent and ship emissions are down 75 percent, according to the port.

The driving force behind the reductions is the port's 2009 Maritime Air Quality Improvement Plan, port officials said. The plan was developed in cooperation with local residents, the Bay Area Air Quality Management District, trucking companies, the U.S. Environmental Protection Agency, the California Air Resources Board as well as marine terminal, railway and shipping operators.

39. Health Costs Add \$18 to the Real-World Cost of Every Tank of Gas

A gallon of gas costs, on average, about \$2.23. But the health and societal costs associated with burning that gallon of fuel add another \$1.30 or so. That's according to the American Lung Association in California, which just finished a study of the environmental costs of the cars.

Getting all of California to shift to zero-emissions vehicles would save the state about \$7.5 billion a year in health and societal costs, including about \$3.8 billion in health costs, \$1.5 billion in climate-related damage savings, and about \$2.3 billion in energy-security cost savings, the American Lung Association wrote in its "The Road to Clean Air" report. As part of those savings, more than 400 premature deaths would be avoided, as would about 29,000 missed work days and more than 9,000 missed school days.

Factor in the nine other states that have adopted California's zero-emissions vehicle standards, and the numbers get much larger. Light-duty vehicle emissions spur annual societal costs for the 10 ZEV states of \$37 billion, pegging the real-world cost for a full tank of gas at about \$30. More tellingly, such emissions cause almost 2,600 premature deaths a year within those 10 states.

The American Lung Association is releasing its study about 18 months ahead of when the National Highway Traffic Safety Administration, Environmental Protection Agency (EPA), and the California Air Resources Board (CARB) will make their decision on if or how to tweak the corporate average fuel economy (CAFE) mandate. Currently, CAFE standards call for US fleetwide fuel economy to reach a real-world level of about 40 miles per gallon by 2025, which is up about 50 percent from the current average.

40. Air Pollution Is Bad For Wall Street

Every week, it seems, there's new research about the consequences of air pollution - and in particular of the smallest airborne particles, known to scientists by the name PM2.5. In a new working paper published by the National Bureau of Economic Research, three economists demonstrate that poor air quality may even be capable of dinging stock market returns, produced by traders who are very much indoors at the New York Stock Exchange.

Examining the daily returns of the S&P 500 index from January 2000 through November 2014, the researchers showed that on days with bad air quality in lower Manhattan within a mile of the exchange, stock returns tended to be lower.

"A one standard deviation increase in PM2.5 decreases the daily percentage returns by 11.9%, a substantial effect on daily NYSE returns," the study reports. Or to put it less technically: "In New York, if you take a day from the cleanest 20 percent of days, and make it one of the dirtiest 20 percent of days, other things being equal, the effect of that on the stock returns, it depresses them by 11 or 12 percent," explained Anthony Heyes, a professor of economics at the University of Ottawa and the study's lead author. "Which is a fairly significant number."

Heyes conducted the study with his University of Ottawa colleague Soodeh Saberian and Matthew Neidell of Columbia University.

The study does not take a strong stand on how this happens. But the researchers think that being subtly irritated by air pollution, and not feeling well, contributes to being more risk averse in one's behavior. This, in turn, would then lessen investors' performance.

Exploring this idea, the study shows that air pollution levels in lower Manhattan also had a relationship to the Chicago Board Options Exchange (CBOE) Volatility Index, or VIX, which is a widely accepted indicator of investor fear or worry. The VIX tended to increase when pollution was worse, the study found, such that "a one unit increase in PM2.5 concentration increases the value of VIX by 1.9%." "We would say, the movements in VIX that we see are consistent with reduced risk appetite," said Heyes, noting that the researchers are only suggesting this mechanism, rather than having definitively proved it.

The researchers also performed statistical techniques to control for other extraneous factors like weather, levels of traffic, and the presence of other pollutants than PM2.5 in deriving their findings.

The findings are not all that surprising, notes Tom Chang, a professor at the Marshall School of Business at the University of Southern California, in that prior studies have also shown

psychological factors that affect investor behavior, such as whether it's a sunny day or even who just won the World Cup. Chang has also recently published work on the subtle effects of air pollution on the productivity of indoor office workers -- work he co-authored with Neidell -- but was not involved in the current study.

41. EPA Requires Halliburton to Cut Air Pollution near LA Schools

The U.S. Environmental Protection Agency Thursday announced a \$400,000 settlement with Halliburton Energy Services that includes \$180,600 for environmental projects to reduce air pollution at Los Angeles area schools. The payment settles claims that the multinational oil and gas company operated a fleet of diesel trucks in violation of the Clean Air Act, according to the EPA.

The company will also spend \$75,000 on air quality improvements in the San Joaquin Valley, and will pay a \$154,400 civil penalty, according to regulators.

Federal officials made the announcement at Van Deene Avenue Elementary School near Torrance, joined by officials from the California Air Resources Board, the South Coast Air Quality Management District and the Los Angeles Unified School District to highlight the air filtration systems being installed to protect students' health.

Halliburton, headquartered in Houston, operated 61 heavy-duty diesel trucks in California from 2012 to 2014 without the required soot filters and failed to verify compliance with the Truck and Bus Regulation for its hired motor carriers, the EPA said.

"This ground-breaking settlement takes aim at a major source of road pollution in a state burdened with some of the worst air quality in the nation," said Alexis Strauss, EPA's acting regional administrator for the Pacific Southwest. "Transport companies must comply with California's rule to cut the pollutants that lead to higher asthma rates for children and more emergency room visits for heart and lung illnesses."

42. Exxon Asks Court to Toss Out New York State's Climate Change Case

Exxon Mobil Corp has asked a federal court to throw out a subpoena from New York State that would force the oil company to hand over decades of documents as part of a wide-ranging inquiry into whether it misled investors about climate change risks. The filing means Exxon has now requested the U.S. District Court in Fort Worth, Texas for injunctions against two major climate subpoenas: one issued by New York and another from Massachusetts that the company challenged in June.

Exxon, which for more than a decade has acknowledged the risks of climate change, has criticized the prosecutors' inquiries as politically motivated.

A group of state attorneys general, led by New York, said in March they would go after the world's largest publicly traded oil company for allegedly violating securities laws by soft-pedaling the dangers of climate change and efforts to fight it.

Judge Ed Kinkeade has yet to rule on Exxon's requests in the high-profile case. But in a statement to the court last week, Kinkeade said he would be concerned if there was "bias or prejudgment about what the investigation of Exxon would discover" when Massachusetts Attorney General Maura Healey issued her subpoena.

Eric Soufer, spokesman for New York State's attorney general, accused Exxon of forum-shopping. "Exxon will do everything in its power to distract, delay, and avoid any investigation into its actions, which may have violated state securities and consumer fraud laws. Exxon's latest claims in its stunt litigation in Texas are meritless," he said.

Subsequently, New York filed in a New York court to derail Exxon's latest request.

In its filing, Exxon said New York's inquiry has periodically shifted focus, first by looking for misleading comments about climate change, then moving onto the value of its reserves and how they might be "stranded" in the ground by carbon regulation in the future.

Exxon said in September the U.S. Securities & Exchange Commission is the right agency to vet how it books reserves and that it complies with accounting and securities laws. Some legal experts have said that, regardless of Exxon's past comments on climate change, it could not have violated securities laws because investors gather their information from a variety of entities with disparate views.

43. Obama Power Plant Rules Face Key Test in Court

The centerpiece of President Barack Obama's climate change strategy faced a key test as conservative appeals court judges questioned whether his administration overstepped its legal authority under an air pollution law to make sweeping changes to the U.S. electric sector. Twenty-seven states led by coal-producer West Virginia and industry groups are challenging the Environmental Protection Agency's Clean Power Plan rules before 10 judges of the U.S. Court of Appeals for the District of Columbia Circuit.

They argue that the EPA overstepped its regulatory authority under the federal Clean Air Act when the agency issued rules to curb greenhouse emissions mainly from coal-fired power plants. The U.S. Supreme Court has put the regulations on hold while the case is litigated.

The highly anticipated arguments drew a crowd of hundreds at sunrise to watch the opponents face off against the EPA, 18 states and some supportive power companies. The EPA told the judges that the agency had the power under the Clean Air Act to craft the rule, and that it was cost-effective and achievable.

The challengers could face an uphill battle to win over a majority of the 10 judges, six of whom are Democratic appointees.

Judge Brett Kavanaugh, appointed by former President George W. Bush, said while he understands the political and moral obligation to address global warming and the importance of the United States to international climate action, the Clean Power Plan's impact on the U.S. economy and on certain coal-reliant communities should require Congress to have a say. "This is a huge case. It has huge economic consequences," said Kavanaugh.

He added that climate change does not give the EPA a "blank check" to use the Clean Air Act flexibly.

Judge Thomas Griffith, another Bush appointee, questioned: "Why is this (debate) not going on the Congress floor but in front of a room full of unelected judges?"

The EPA argued before that the Supreme Court has already given the EPA authority in previous cases to use the section of the Clean Air Act at issue to regulate greenhouse gas emissions.

Justice Department lawyer Eric Hostetler, representing the EPA, said the agency designed the rule to be cost effective and "deepen" the shift already taking place toward cleaner energy. "The EPA looked at what was going on in the real world," he said, noting that most states are already shifting the make-up of their electric generation.

In comments indicating support for the government's position, Judge Judith Rogers, appointed to the court by former President Bill Clinton, said the EPA should not close its eyes to trends in the electric sector which have seen utilities diversify their energy mix. "You can't survive in this market unless you do that," she said. Some of the other Democratic appointees voiced similar sentiments indicating they did not think the regulations constituted a major shift as the challengers argue.

The Clean Power Plan was designed to lower carbon emissions from U.S. power plants by 2030 to 32 percent below 2005 levels. Power plants are the largest source of U.S. carbon emissions.

The Clean Power Plan is the main tool for the United States to meet the emissions reduction target it pledged to reach at U.N. climate talks in Paris last December.

The fate of the Clean Power Plan was thrown into question on Feb. 9 when the Supreme Court made a surprise 5-4 decision to grant a request by the challengers to put the rule on hold while the appeals court considered the matter.

The eventual appeals court ruling could decide the case, even if it goes to the Supreme Court. The Feb. 13 death of conservative Justice Antonin Scalia left the court ideologically split with four conservatives and four liberals. A 4-4 ruling by the high court would leave in place the appeals court ruling.

The case is being heard by 10 judges rather than 11 because the court's chief judge, Merrick Garland, has recused himself from the case. Garland is Obama's nominee to replace Scalia.

A 5-5 ruling would leave the regulations in place.

A ruling is unlikely before the end of the year and possibly not until after Obama leaves office on January 20.

The outcome of the November 8 presidential election could be pivotal for the regulations. If Republican Donald Trump wins, the government could reverse the rules or decline to appeal to the Supreme Court should the appeals court strike them down. If Democrat Hillary Clinton is elected, the losing side in the appeals court ruling could be expected to take the case to the Supreme Court.

44. More Than 300 Scientists Warn Over Trump's Climate Change Stance

Hundreds of top scientists have warned against Republican presidential nominee Donald Trump's vow to pull the United States out of the Paris climate-warming accord if elected in November. The 375 members of the U.S. National Academy of Sciences, including 30 Nobel Prize winners, said in an open letter that a U.S. abandonment of the agreement would make it far harder to develop global strategies to lessen the impact of global warming.

"Thus it is of great concern that the Republican nominee for President has advocated U.S. withdrawal from the Paris Accord," the letter said.

"A 'Parexit' would send a clear signal to the rest of the world: 'The United States does not care about the global problem of human-caused climate change. You are on your own.'"

Among the signers are biologist E.O. Wilson, physicists Stephen Hawking and Claude Canizares, astrophysicist Simon D.M. White, and Nobel winners Thomas Steitz, Michael Levitt and William Daniel Phillips.

The National Academy of Sciences is a private society of scholars who advise the United States on science and technological matters. The signers of the letter said they did so as individuals and not on behalf of the Academy or their institutions.

In Paris last December, almost 200 countries agreed to slash greenhouse gases and keep global temperature rises to "well below" 2 degrees Celsius. The United States and China, the two largest producers of carbon emissions, ratified the accord this month.

Trump has dismissed manmade climate change as a hoax invented by the Chinese and says he will abandon the Paris agreement if elected. He has vowed to reverse much of the work the administration of President Barack Obama has done to address climate change, including rules to curb greenhouse gas emissions.

The Republican Party platform also questions the legality of Obama's executive order ratifying the Paris deal.

Democratic presidential nominee Hillary Clinton is a strong supporter of the Paris accord.

45. NASA Appoints UW Professor to Lead New Initiative

For the general population, satellites are simply there to help watch T.V., text, for the conspiracy theorists, spying or for a Skynet-esque takeover. But for UW-Madison professor Tracey Holloway, satellites are a tool for improving peoples' lives.

Holloway, a professor in the Nelson Institute for Environmental Studies and in the Department of Atmospheric and Oceanic Sciences, was recently selected by NASA as team lead for their Health and Air Quality Applied Sciences Team. HAQAST is a new project starting this fall made up of 13 members from institutes and organizations across the U.S., with Holloway as the team lead based in UW-Madison. It is a three-year initiative to make satellite data and other NASA tools and data more relevant to decision-making around health and air pollution.

"Nearly half of the U.S. population lives in places deemed unhealthy for air pollution by the EPA," Holloway said. "America uses a lot of energy per person, much of which comes from coal, natural gas and petroleum. But why don't we have bad air pollution like India and China? We spend a lot to have technology to make exhaust cleaner for reactive chemicals that lead to asthma, heart disease and premature death. There is an increased focus on public health."

HAQAST is a follow-up to NASA's Air Quality Applied Sciences Team, which ran from 2011 to 2016. The new team is smaller than the original, which was comprised of 19 members, and focuses specifically on the public health aspects of air pollutants.

“This new team is making public health a much greater focus. It’s not just about getting data about air pollution, it is getting it directly to public health organizations,” Holloway said. “Our goal is to get the best science into the hands of people working on these issues.”

Most are using ground instruments, and those are the “gold standard,” according to Holloway. The main problem with ground instruments is most of the U.S. doesn’t have ground monitors outside of cities, and they don’t record all air pollutants.

“There are no monitors over the great lakes or over oceans or over much of the U.S. outside of cities. Satellites can see everywhere, and most pass over every day. We have snapshots of the whole earth every single day with an unprecedented amount of data,” Holloway said.

Satellites play a role in our day-to-day activities but are also a key component in advancing our knowledge of air pollutants and how they affect public health.

“A lot of people don’t know about satellite data. We use it every day, from Google Maps to the cool images of earth from space. Satellites can see particles in air invisible to human eyes. The air we breathe and chemicals we breathe can be seen from space, and that is exciting,” Holloway said.

The team’s overall message is there is this huge investment in satellite technology and keeping air clean in the U.S., but satellite data and other aspects of NASA science are not yet connected to decision making for air pollution and public health.

“There are some pioneers making that connection, but it is not yet [the] norm. We are trying to make that the norm,” Holloway said. “We are looking at what are the questions users have that satellites can and can’t answer. Where do we need to be advancing our technology to be able to answer new questions?”

One of the main objectives of HAQAST is getting this information and advanced data to decision makers.

“People don’t realize how many organizations are involved in air quality and public health issues,” Holloway said. “There is the EPA at the national level, and every state has an agency working on air issues, plus many huge industries, consulting companies, and non-profits. Air issues, also, [are] part of the work at the Department of Energy, the National Park Service, the Department of Transportation and other organizations.”

Holloway’s job as team lead is to coordinate with all 13 members from institutions across the U.S. In Madison, she works with Professor Steve Ackerman, Professor Jonathan Patz and National Oceanic and Atmospheric Administration (NOAA) scientist Brad Pierce. She also works with collaborators from the EPA and a regional air quality organization the Lake Michigan Air Directors Consortium.

“[HAQAST] will meet twice a year, and part of my responsibility is to organize these meeting[s] and establish a social media presence to connect with the public,” Holloway said. “My job is to coordinate research to make sure person A, B and C can maximize their benefits by coordinating their strength. It’s finding the connection and making the most of the collaboration.”

HAQAST’s first meeting is this November in Atlanta, Georgia, the home base for the Center for Disease Control.

“The CDC is a big organization that is a potential connection. They already use NASA data for air pollution, and we want to see how we can build on these activities and support their work,” Holloway explained.

NASA regularly gives grant money to researchers at universities and labs to do research; it is not new for them to fund research. What is new is supporting researchers as a team. “For something like this where you’re trying to make a change in the way data is used, you’re working with these bigger organizations like the CDC. Having a team makes for a more visible presence,” Holloway said.

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46. India Adopts Euro 6/VI Emissions Standards Leapfrogging Over Euro 5/V

On September 16th, the Government of India (Union Ministry of Road Transport and Highways) has finally notified Euro VI emissions standards for all vehicles (LDVs and HDVs) to be implemented nation-wide in 2020. Thus, India gains nearly 5 years as the original proposal was to delay their adoption to 2024-25. This is also a big step forward as with this notification the country skips Euro V altogether and leapfrogs directly to Euro VI - quite a unique step in the developing world.

Regulations have also provided for real world emissions testing with PEMS and in-service conformity factor (initially for data generation and final adoption in 2023).

The new notification also includes emissions standards for two/three wheelers. For the first time India adopts particulate matter standards for two-wheelers, separates out HC and NOx for regulations and also adopts OBD for these vehicles.

47. Indian Government Toughens Emission Norms for Auto Manufacturers

All automobile manufacturers will have to give detailed declarations about the emission levels of vehicles they manufacture from next April.

In a recent notification, the road transport ministry has amended Form 22 under the Central Motor Vehicles Act, which is used to provide the initial certification of compliance with pollution standards, safety standards of components quality and road-worthiness certificate for all vehicles.

Earlier, Form 22 only certified that the vehicle in question complied with the provisions of the Motor Vehicles Act and rules thereunder, including the relevant emission norms.

From April, however, manufacturers will have to provide emission details for each vehicle in the revised Form 22. It will include the brand, chassis number, engine number (motor number, in case of battery-operated vehicles) and emission norms of the vehicle and will specify the levels of each pollutant like carbon monoxide, hydrocarbon, non-methane HC, NOx, HC + NOx, PM etc. for petrol and diesel vehicles. It will also mention the sound level for horn and pass-by noise values.

The amended rules will apply to all vehicles run on petrol, CNG, LPG, electric, diesel and hybrid, including agricultural and construction vehicles, as well as e-rickshaws and e-carts.

Form 22 will be issued with the signature of the manufacturer. In the case of e-rickshaws and e-carts, this form will be issued with the signature of an authorized signatory of a registered e-rickshaw or e-cart association.

48. India's Small Commercial Vehicles Must Meet Tougher Standards

India has issued new fuel efficiency standards for small commercial vehicles with the aim of lowering their carbon dioxide emissions and improving fuel economy 15 percent by 2021.

Effective April 1, 2017, commercial passenger vehicles that weigh less than 3,500 kilograms (7,716 pounds) and can seat up to nine people must comply with average fuel consumption standards under the 2001 Energy Conservation Act, the government said in an October 4 notification.

Under the new standards, vehicles manufactured during the 2017–2018 model year must conform to carbon dioxide emissions of 123 grams per kilometer, or average a distance of at least 18 kilometers per liter, while those made in 2021–2022 and later must emit no more than 113 grams per kilometer, or average at least 21 kilometers per liter. This will improve fuel efficiency 10 percent in 2017 and 15 percent by 2021 and match the commercial vehicle fuel efficiency of the European Union and the U.S., according to the Ministry of Road Transport and Highways.

49. Air Quality Plummets in Delhi Even Before Diwali

Friday morning in Delhi was slightly chilly and pleasant, with minimum temperature settling at 16.1 degrees Celsius, normal for this time of year. However, the ominous sign of smog-like mist in the air showed that this was just another bad day in terms of the air we breathe in the capital.

Data from the Hindustan Times air quality map showed that the air quality index (AQI) in the city touched the maximum limit of 500 at many places including Anand Vihar, Punjabi Bagh and RK Puram. The AQI is an index to define the air quality which tells us how clean or polluted the air is. It considers eight pollutants (PM10, PM2.5, NO₂, SO₂, CO, O₃, NH₃, and Pb). Based on the measured ambient concentrations of these pollutants, a sub-index is calculated for each of these and the worst sub-index reflects the overall AQI.

On 10 am on Friday, Anand Vihar, arguably the most polluted spot in the city, had the foulest air. PM10 reached 845 $\mu\text{g}/\text{m}^3$ while PM2.5 touched 325 $\mu\text{g}/\text{m}^3$. The permissible level of PM 10 is 100 micrograms per cubic meter. It is 60 micrograms per cubic meter for PM2.5. At RK Puram, PM2.5 reached as much as 449 $\mu\text{g}/\text{m}^3$. Similarly, at Punjabi Bagh, PM10 touched 688 $\mu\text{g}/\text{m}^3$ while PM2.5 clocked 314 $\mu\text{g}/\text{m}^3$.

At Mandir Marg, the AQI was 424. PM 10 clocked 449 $\mu\text{g}/\text{m}^3$ while PM 2.5 reached 253 $\mu\text{g}/\text{m}^3$. Similarly at Shanti Path the AQI reached 441 with PM2.5 levels touching 302.9 $\mu\text{g}/\text{m}^3$. Pollution level is classified as severe if the AQI ranges from 401 to 500. Such a situation is called “red alert” in China. When it continues for three consecutive days, it calls for desperate measures like shutting down schools and offices, closing down industries and power plants and start road rationing of vehicles.

When air quality is “very poor” in terms of AQI, people are advised to avoid outdoor activity, especially the elderly and young children, and use anti-pollution masks. At Shadipur, the AQI reached 394 with PM2.5: recording at 242.77 $\mu\text{g}/\text{m}^3$. At Netaji Subhas Institute of Technology, it was 350 with PM2.5 levels touching 185.4 $\mu\text{g}/\text{m}^3$

At some corners of the city, however, things were much better. Monitoring at Lodhi Colony showed an AQI of 55 with PM 10 clocking 55.03 µg/m³ and PM2.5 reaching 27.9 µg/m³. At Adchini, it was 70 with PM10 clocking 55.57 µg/m³ while PM2.5 touching 42.12 µg/m³.

At CR Park, the AQI on Friday morning was 44. PM10 reached just 44.08 µg/m³ while PM 2.5 touched 8.24 µg/m³.

The dip in air quality has been primarily attributed to an increase in vehicular traffic in the festival season, decreasing temperatures and lack of winds. Low wind speed settles pollution particles on the surface instead of blowing them away.

The situation will worsen in next few days as more vehicles are expected to be on the road for Diwali -- pollution levels usually jump by almost five times as revelers burst millions of firecrackers.

“Ambient air is influenced heavily by activities such as agriculture burning, industrial emission, operation of more than 4,000 brick kilns and massive ongoing construction activities. Major farm fires have been recently reported in Punjab and Haryana. Delhi being on down-wind direction has been impacted severely and the city may face critically polluted period during the coming days,” an environment department official had said on Thursday.

50. Korean Prosecutors Question VW Exec over Dieselgate

Former Audi VW Korea CEO Trevor Hill traveled from Germany to be grilled by Korean prosecutors, claiming that Volkswagen headquarters in Germany did not order its Korean subsidiaries to install emission cheating software.

Hill, 54, who served as CEO of Audi VW Korea from 2007 to 2012, was alleged to knowingly be involved in importing diesel-equipped vehicles that used special software to control the engines so that they passed laboratory tests, but during regular vehicle operations greatly exceeded permissible emission levels.

Outside the Seoul Central District prosecutor’s office, Hill tells reporters his intent was to clear up emission questions about Audi VW Korea, saying he had not been aware of software being installed to cheat on emissions testing and denying knowledge that VW headquarters was involved in ordering any emission-compliance irregularities in Korea.

Prosecutors questioned Hill about the emission-rigging software and also on allegations that VW submitted fraudulent vehicle test reports in order to obtain fuel-economy and noise-level certification.

The prosecutors also called him out on VW’s evasion of a July 2011 order from the Ministry of Environment to provide technical data that would explain why Audi and VW diesel engines were found to emit illegally high levels of nitrogen oxide when in operation. VW never provided the information and still has not provided it, according to the Ministry.

Hill, the second of seven Volkswagen executives summoned from Germany to give testimony to Korean prosecutors in the Audi VW Korea emission-rigging scandal, currently is the director of strategic projects – internationalization, at Audi AG headquarters in Germany, a post he’s held since July 2015. Prior to that appointment he served as managing director of Audi’s Middle East operations after heading Audi VW Korea.

Just four weeks ago, the first of the seven executives, Detlef Stendel, was grilled for an entire day by the prosecutors. Based in Germany, Stendel is a veteran VW executive in charge of all VW emission testing. Stendel also told the prosecutors that he had come to Korea voluntarily in order to answer questions and thoroughly explain the emission situation to Korean officials. He too was questioned about VW's 2011 refusal to explain the high level of nitrogen-oxide emissions in many of the diesel engines.

It is not clear if any of the remaining five VW executives from Germany will appear in Korea for questioning. Observers believe Hill's testimony yesterday may end the initial questioning phase.

The prosecutors earlier had questioned Audi VW CEO Johannes Thammer, VW Korea CEO Thomas Kuehl, and former VW Korea CEO Park Dong-hoon, who is now the CEO of Renault Samsung Motors. All three had been questioned in suspect status and could possibly face charges.

51. South Korea Import Vehicle Sales Plunge 12.5% On-Year in August

Sales of imported vehicles in South Korea dropped sharply from a year earlier in August, industry data showed, following the government ban on sales of 80 Audi and Volkswagen vehicle models in the worst emissions scandal in the country's history. According to the data compiled by the Korea Automobile Importers and Distributors Association (KAIDA), 15,932 imported cars were registered here in August, down 12.5 percent from the same month last year.

From a month earlier, the August tally marked a 1.3 percent increase.

The sharp on-year drop came as the government revoked the sales licenses of 80 vehicle models sold by Audi Volkswagen Korea, the local importer of the German cars, for fabricating their emissions and fuel efficiency test results.

In August, 476 Audi cars were newly registered here, down 83 percent from 2,796 in August 2015. Volkswagen suffered a 97.6 percent on-year plunge with only 76 cars registered here last month, the data showed.

With the sharp drop in sales of Audi and Volkswagen cars, the combined market share of German vehicles also slipped to 54.8 percent in August from 74.6 percent a year earlier, according to KAIDA.

Mercedes-Benz, on the other hand, continued to expand its market share, selling 4,835 cars, up 32 percent from the same month last year. BMW saw its market share shrink slightly from 20 percent to 19.13 percent over the cited period as its sales dropped 16.3 percent on-year to 3,047 cars in August.

In the first eight months of the year, the number of newly registered imported cars came to 148,411, down 6.5 percent from the same period last year.

52. Wuhan Sets Up Fund for Developing Hydrogen Energy Vehicles

Wuhan, the capital of central China's Hubei province and a major automobile production base, has set up a fund to invest in the hydrogen-powered automobile industry, CNS reported.

The municipal government signed a deal with two top Chinese universities -- Tongji University and China University of Geosciences -- to jointly establish a fund worth 200 million yuan in efforts to kick-start the industry. The government hopes the fund can attract an additional 10 billion yuan from the provincial fund for regional economic belt development.

Hydrogen fuel cell technology is considered a clean energy source in the automobile industry. According to the deal, the government will encourage domestic automakers to establish independent hydrogen vehicle brands. A trial production of prototype hydrogen-powered buses and logistic vehicles is expected later this year.

53. China to Grant Low-Speed Electric-Vehicle Makers Legal Status

China plans to plug a regulatory gap and begin overseeing low-speed electric vehicles used mainly in the country's rural areas, legitimizing a market segment that dwarfs sales of regular battery-electric cars made by the likes of BYD Co. and Tesla Motors Inc.

Under the current regulatory framework, there are no rules governing the production and sale of electric vehicles with top speeds below 100 kilometers per hour (62 miles per hour). The result has been a proliferation of cheap, poorly made EVs powered by polluting lead batteries that pose a threat to road safety and the environment, the Ministry of Industry and Information Technology said October 17 in a statement on its website.

The government will legalize manufacturers that meet the standards governing EV startups and regulate them under those requirements, while enacting technical specifications for the rest, the ministry said. Those that don't meet the new benchmarks, which are under discussion, will be closed down, according to the statement.

"The move will force existing electric vehicle makers to speed up product development and compete for consumers," said Cui Dongshu, secretary-general of the China Passenger Car Association. "It is great news for low-speed electric car makers as they can finally make cars legally."

In China's Shandong province alone, more than 330,000 of these unregulated low-speed EVs were sold in the first eight months of this year, more than the 245,000 officially approved new-energy vehicles delivered across the country in the same period, according to auto association data.

In taking steps to legalize an industry that has been growing rapidly despite regulatory ambiguity, the government will boost market leaders such as Shandong Shifeng Group Co., as well as startups like Chehejia, whose founder Li Xiang started China's leading car-buying portal Autohome Inc.

"On one hand, low-speed electric cars meet certain short-distance travel demand, while on the other hand products made by the companies that have been producing without permission have poor quality and low safety performance," the ministry said. "We will continue to work with other government agencies to speed up introduction of relevant regulatory measures and push forward development of the low-speed electric vehicles."

China has been issuing newcomers to the auto-making industry production licenses as part of its push to encourage innovation. Companies from Internet video billionaire Jia Yueting's Le Holdings Co. to startup WM Motor, founded by a former top executive of Zhejiang Geely Holding Group

Co., have raised billions of dollars in a bid to enter the world's biggest auto market, including for electric vehicles.

Beijing CH-Auto Technology Co., which started designing cars in 2003, became the latest startup to win an electric car production license this month, following Beijing Electric Vehicle Co. and Hangzhou Changjiang Passenger Vehicle Co. China's government is considering limiting the number of startup EV makers to a maximum of 10.

54. China Coal City Becomes World Leader in Electric Vehicles

Sitting in the middle of almost 270 billion tons of coal reserves, the city of Taiyuan in northern China is an unlikely place to look for a leader in the battle for a greener future. This after all was China's pollution poster child, a grimy industrial city of 4.3 million people that owed its growth to the coalfields of surrounding Shanxi province, among the nation's biggest. Once ranked as the only metropolis in the country with air that was fouler than in Beijing, China's coal capital is trying to clean up its act.

The local government has implemented rules designed to bring blue skies back to the city, requiring coal-fired plants to install scrubbers, clamping down on heavy-polluting vehicles, regulating barbecue stands and banning farmers from burning straw. But its biggest coup came last month, when it became the first city to replace its entire fleet of taxis with electric vehicles.

Eight thousand cab drivers have traded in their Volkswagen Jettas and Santanas for new, subsidized BYD Co. all-electric E6s at a total cost to the government of 800 million yuan (\$120 million). Another 129 million yuan or more has gone to funding a network of 1,800 charging stations to keep the cars running. It is a welcome boost for state-owned factories that have struggled with an economic slowdown and a national shift away from coal.

"This is a big cake and a lot of people want to have a taste," said Gao Peng, head of the new energy unit at state-owned Shanxi Fenxi Heavy Industry Co., which turned its filing-cabinet factory into an indoor charging station in July. "There are so many idled but spacious factory buildings in the city. "

With industrial provinces across China struggling to transform from the old debt-fueled, state-run model, Taiyuan's taxis could offer a path to ease the pain. The total debt of China's top coal producers rose to 3.66 trillion yuan at the end of July, according to state-run Xinhua News Agency. The country has to fire 1.3 million coal workers to trim overcapacity, Human Resources and Social Security Minister Yin Weimin said in March.

In downtown Taiyuan, an elevated highway to the new high-speed rail station is surrounded by unfinished office towers, an area that was meant to be the city's answer to Shanghai's Lujiazui business district. On a recent afternoon, most of the construction sites were idle.

Further to the northeast is Heping Bei Lu, an avenue of large residential blocks built by state-owned companies for their workers. It is known locally as "unemployment street." Some residents have become taxi drivers, or work for ride-hailing service Didi, China's answer to Uber.

"It's hard to do the business," said Yan Wusheng, a taxi driver for 10 years, who used to work at the government coal transportation company. "Fewer people are taking cabs these days because their salaries are not good."

Yan got his new E6 in April and has clocked up 43,000 kilometers (27,000 miles) in the taxi, which he says feels heavier than his old Jetta. His earnings are down by about a fifth this year because of the slump and the need to spend two hours each day recharging the battery.

Taiyuan's taxi replacement plan got a boost in January after Mayor Geng Yanbo signed an agreement with BYD to set up a manufacturing plant in the city. Geng, 57, gained a reputation for trying to wean the local economy off coal in his previous position as mayor of nearby Datong, where he became known as Demolition Geng for his plan to rebuild the urban center as a model Tang Dynasty city, relocating half a million people.

The combination of economic slowdown and cleaner vehicles has helped Taiyuan drop down the pollution rankings. It fell to 86th out of 366 Chinese cities that Greenpeace monitored last year. Air quality in the city improved 18 percent in the first half of this year as the new electric taxis were being rolled out.

The success has put the provincial capital in the vanguard of President Xi Jinping's plans to roll back the deadly pollution that built up in China's cities during the boom years. The central government wants to see 12,000 charging stations across the nation to serve 5 million electric vehicles by 2020.

The National Development and Reform Commission, China's top policy body, issued directives this month designed to speed up the construction of chargers in residential areas. At least 14 cities including Beijing and Shanghai offer subsidies of up to 30 percent to encourage companies to build the stations, according to public filings.

The lack of charging stations is one of the key roadblocks to getting the public to buy electric vehicles. In an exhibition hall below the imposing tower of blocks of the Coal Trading Center of Taiyuan, residents view the latest EV offerings and other green technologies at an energy expo. One said he would like to see at least triple the number of charging stations before he would buy an EV. Others complained of the high price or worry about the quality and weight of the vehicles. Taiyuan cut the approval process for new charging stations to encourage operators. Shanxi Fenxi received the green light three days after it submitted an application in June. The maker of generators and equipment for ships and mines cleared machine tools out of its cabinet factory and installed 19 charging posts, offering drivers a car wash, Wi-Fi, cheap beef noodles and deck chairs to relax in during charging, which typically takes 30 minutes to 2 hours.

E6 cabs wait in lines during the peak recharging time around midnight, and the station cleared nearly 300,000 yuan in the first 40 days after opening, according to Gao. Fifteen former factory employees, who otherwise would have been fired, are now station managers, monitoring the posts via a smartphone app.

Gao expects to recover the investment in a year, but competitor Yang Junlin is less optimistic. He rented a disused plant from state-run Shanxi Pharmaceutical Group Taiyuan Pharmaceutical Co. in the west of the city after agreeing to hire former workers.

"The government doesn't like unemployment," Yang said in his newly opened station, which has beds for drivers to take a nap and 10-yuan lunch sets. "But those accustomed to the SOE culture always complain this work is too hard and soon quit."

Yang estimates that it could take four years to get a return on his 2 million yuan investment. The test, he says, will be the winter.

The average temperature in January is minus 6 degrees Celsius (10 degrees Fahrenheit) and that could affect battery performance. The lower the temperature, the shorter the range and the longer it takes to charge the taxi. "Only if the EVs can endure the cold weather this year will our business live on," said Yang.

55. Construction Sites Found Flouting Anti-Smog Rules In Beijing, Says MEP

Spot checks by environmental officials in Beijing found a string of building sites and farms breaking the city's emergency air pollution rules as a new bout of smog hit the capital, Xinhua reported. The investigation by the Ministry of Environmental Protection (MEP) came after a spike in pollution levels forced authorities to issue a yellow warning for air quality, the third-worst on a four-tier rating system.

At least 10 construction sites, mostly in the outskirts of Beijing, were found to be in operation after they were legally required to cease activity, the MEP said in a statement.

Ministry checks in suburban Beijing also found that local authorities had failed to act against farmers who were burning crop waste in 10 separate locations.

The ministry said it would strengthen inspections across Beijing, Hebei province and Tianjin, and hold officials who fail to enforce anti-pollution regulations to account.

56. China Wants 3 Million Electric Cars By 2025

China's goal of putting three million electric cars on the road by 2025 still appears to be on track. But some automakers who took government funds without delivering on their promises are being forced to pay that money back, CCTV reported.

The electric car industry is booming in China. At the Chengdu Auto Show, held in southwest China's Sichuan province, Yuan Xiaolin, president of Volvo Car Asia Pacific, said: "Our objective is that there will be one million Volvo cars that are powered by electricity by 2025."

China is now the world's largest electric car market, selling some 330,000 electric and hybrid cars last year. It is even beginning to export the technology. To date, four Chinese companies have set foot in the South American market.

The Chinese government has heavily subsidized electric car making as part of plans to tackle air pollution. It is now implementing new checks after discovering five companies had abused the subsidy program. These companies either overstated their own capabilities, or falsified sales information. The government plans to phase out these EV subsidies by 2020.

57. China Embraces Hybrid Cars in Detour from Plug-In Only Path

China's government is pivoting after years of promoting plug-in vehicles, elevating the importance of conventional hybrids and setting its first sales targets for the segment in a move that could benefit Toyota Motor Corp. and suppliers like Hunan Corun New Energy Co.

The government wants one in four vehicles to be plugless hybrids that run on both gasoline and electricity by 2030, according to a transcript of comments made Oct. 26 by Ouyang Minggao, who leads a group China's auto industry regulator commissioned to set targets for energy-saving autos.

Before reaching the 2030 goal, hybrid sales should account for 8 percent of total passenger vehicle sales by 2020 and rise to 20 percent by 2025, according to the Technology Roadmap for Energy Saving and New Energy Vehicles, drafted for the Ministry of Industry and Information Technology (MIIT).

The targets represent a significant shift after years of China's government policies excluding conventional hybrids from subsidies offered to reduce tailpipe emissions and dependence on imported oil. The industry regulator has focused on plug-in vehicles and downplayed the importance of hybrids, to the detriment of automakers including Toyota, which argues the technology could be more widely accepted by consumers as a solution.

China requires automakers to lower the average fuel consumption of their vehicles to 5 liters per 100 kilometers by 2020 from the current 6.9 liters. The government has targeted a 10-fold increase in electric vehicle sales by 2025.

58. China Punishes Coal, Steel Companies for Violating Pollution, Safety Rules

China's state planner has punished hundreds of coal and steel companies by forcing them to close or cut output for violating environmental and safety regulations, the latest effort to crack down on the country's heavily polluting industries.

The National Development and Reform Commission (NDRC) forced two steel companies to shut completely, 29 firms to halt production and another 23 to curb output, it said in a statement. The closures and curbs followed a nationwide inspection of more than 1,000 steel makers in the world's top producer.

Among more than 4,600 coal mines inspected, the NDRC has revoked safety certificates for 28 coal mines and forced another 286 coal mines to halt production, it added.

The planner did not identify or name the companies, or give details on how the companies broke the rules and how long the penalties will be in place.

Beyond the safety and environment rules, the NDRC also listed other infractions such as violations of energy consumption rules or quality standards.

The statement reflects the government's continued push to force ageing mills and mines to comply with tough new pollution rules by meeting emission standards and installing appropriate monitoring equipment. China's unwieldy coal and steel industries are considered two of the biggest sources of pollution in the country.

The government is targeting coal output cuts of 500 million tons in the next three to five years.

59. Shanghai Targets Polluting Ships and Gas Stations

Shanghai authorities have stepped up efforts to crack down on ships using fuel oil containing excessive sulfur, a major air pollutant, and gas stations that sell substandard oil, Shanghai Daily reported. The city's quality watchdog and maritime authorities inspected four oil tanks at gas stations, two container ships and six river barges and tested 14 diesel oil samples.

One sample was found to contain 558.8 milligrams of sulfur per kilogram of oil, 10 times higher than the standard set by the city, the Shanghai Quality and Technical Supervision Bureau said.

The Shanghai Maritime Bureau said it had checked 1,441 ships from April to August, and had taken action against 24 cases involving the use of high-sulfur oil. In addition, 15 ships emitting too much black smoke were punished in the April-August period, the bureau said.

Since April, Shanghai has implemented its own standards — the strictest in China — on the amount of sulfur in oil used by ships in an attempt to curb pollution.

60. China Starts Cancelling Under-Construction Coal Plants

According to a Greenpeace report, Chinese leaders have called a halt to construction work on 30 large coal-fired power plants with a combined capacity of 17GW. This unprecedented move indicates just how serious the Chinese authorities are about bringing the country's coal power bubble under control.

And those 30 plants aren't the only ones that are being stopped.

The policy also dramatically scales down plans for transmitting coal-fired power from the west of China to the coast through a network of very long-distance transmission lines.

Another 30 large coal plant projects, for which transmission lines were already under construction, are being axed. Ten of those plants were already under construction but will now be marooned as they will have no connection to the grid.

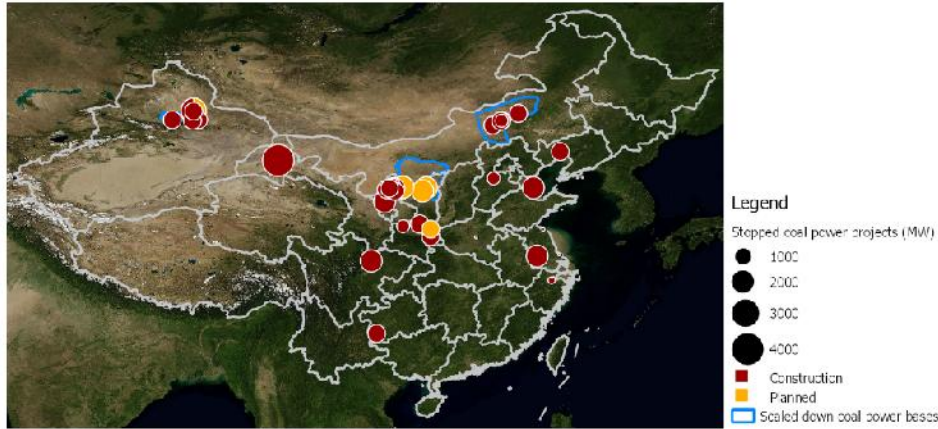
This means China is stopping work on the equivalent of the combined coal-fired capacity of UK and Spain.

Up to now, the Chinese government had avoided interfering in projects that had already been contracted and financed, and where construction had started. The cancellations will be painful, and entail major commercial losses and disputes. But spending money to complete these unneeded coal plants would have been even more wasteful — it would likely have cost well over \$20 billion.

This comes as new research shows the scale of the challenge facing China and India if they are to rein in their coal power plans, which is crucial if the world is to keep temperature rises within 2C as was agreed in Paris last year.

The 'thermal coal in Asia' paper from Energy Transition Advisors estimates that, if China were to allow the construction of coal plants planned by Chinese companies it would put the country on course to overshoot its annual carbon 'budget' for coal by 2020 — and use up the entire budget by 2036. This assumes that the coal plans are limited to those plants already under construction, and others in the pipeline are shelved.

The 'budget' has been calculated by the IEA, and represents the top limit of carbon emissions to 2050 if the world is to have a 50% chance of keeping global warming to 2C.



Greenpeace mapping of affected projects and coal power bases.

China has taken huge steps this year to slow and stop the runaway coal sector, cancelling approximately 100 GW of projects in permitting stage this April. But approval

for nearly 6 GW of new coal power earlier this month raised doubts about its ability to completely stop its coal machine.

India has been shadowing China's experience and would use up its entire carbon 'budget' by 2036, even if it deployed so-called clean technology to existing plants, according to the report.

The country has its own coal bubble, and is building hundreds of coal plants it doesn't need, though has quietly shelved a plan for 1 billion tons of coal per year by 2020.

There are 1,020 planned thermal coal plants in China and India – either under construction or permitted or in the early planning stages. More than 500 are already under construction (389 in China), with a capacity of 270 GW.

These plants alone would produce 30 Gt of carbon emissions, which is 3% of the remaining "budget" if we are to have a reasonable chance of staying within 2C.

If all of these went ahead, they would result in 57 Gton emissions by 2050, even if they operated at only half capacity.

The research also tested a number of different scenarios for China including keeping existing plants with no new construction; going ahead with planned retirements of old plants; and replacing existing plants with new more efficient ones.

All the scenarios resulted in its carbon "budget" being used up well before 2050.

61. China Says 173 Steel Firms Violate Environmental Rules

As many as 173 Chinese steel enterprises were found to have violated the country's environmental rules during recent nationwide investigations into the industry, the environment ministry has announced. The Ministry of Environmental Protection said in July that it had set up dedicated inspection teams to determine whether the country's giant steel sector was meeting state technology and emission standards.

After visiting a total of 1,019 steel enterprises across the country, the inspectors found that 173 firms had broken the rules, with 62 firms involved in illegal construction and 35 exceeding state emission limits, according to the ministry's official publication, China Environmental News.

Worried by the social and political impact of pollution, China has vowed to crack down on lawbreaking companies and the local governments that protect them. It has also promised to use tougher environmental standards to help shut as much as 100-150 million tons of surplus steel capacity over the next five years.

The ministry said 23 of the offending firms had been asked to cut production, while another 29 had been shut down temporarily in order to "rectify" their problems. Fines totaling 18.9 million yuan (\$2.8 million) have been imposed and three officials have been detained.

The paper singled out Xinyi Huada Steel in eastern China's Jiangsu province, saying the local government had repeatedly ignored requests from environmental regulators to close the firm down for producing illegally.

As part of its war on pollution, China's traditionally underpowered environment ministry was this year granted new powers to send inspection teams to local regions without prior warning, and was also given the authority to summon senior provincial officials to explain their conduct.

During a tour of Hebei province, China's biggest steel producing region as well as its biggest polluter, inspectors found that local steel firms had illegally expanded capacity and engaged in "fraudulent practices".

The ministry has called on the regions to continue to pay special attention to the steel sector, to crack down hard on illegal behavior and to cooperate with local government efforts to close down surplus capacity in the industry, China Environmental News said.

62. China Hits Two More Vehicle Makers for Green Subsidy Breaches

China has punished two 'new energy' vehicle makers for producing and selling vehicles with batteries that had lower power capacity than advertised, state media said, the latest move in a widening scandal involving green car subsidies.

The government has accused more than 25 car makers, including Nissan and Hyundai, of breaking rules on green car subsidies in recent month, casting a pall over China's drive to support the industry and combat heavy pollution which affects large swathes of the country.

China spent \$4.5 billion last year in subsidies for such vehicles, although it is set to gradually phase out the payments by 2021. The plan has helped sales of electric and plug-in hybrids more than quadruple last year to 331,000 vehicles.

The finance ministry cut 2016 subsidies qualifications for Lifan Group and Chongqing Hengtong Bus Company for the use of the sub-par batteries, which involved 320 million yuan (\$47.7 million) in subsidies, the official Xinhua news agency said.

A Lifan exchange filing said problems were found in 2,395 Lifan vehicles, amounting to subsidies of 114 million yuan.

Xinhua said Hengtong was fined 62 million yuan and had its 2016 subsidy qualifications revoked for batteries used in 1,176 vehicles between 2013 and 2015.

Lifan declined to comment immediately on the matter and Hengtong could not be reached immediately. Both companies are based in the southwestern city of Chongqing.

Analysts have said the subsidy cheating investigations have been a blow to China's efforts to reach a full-year sales target of 700,000 electric and plug-in hybrid cars.

63. Katmandu Valley Picked For Air Quality Improvement Project

According to Department of Environment, the Ratnapark-based station, which came into operation on August 9, measurement of particulate matter concentration in the air is continuous. The data collected by the Ratnapark-based station shows very high concentration of dust particles, especially particulate matter 10 (PM 10) and PM 2.5 in the air. The station measured 188 micrograms of dust particles per cubic meter the highest since it began operation on August 22.

In 2002, the Danish government had installed seven air quality monitor stations in the Valley. Five of these stations were built in Machchegaun, Kirtipur, Patan, Putalisadak, and Bhaktapur respectively and two in Thamel.

After the stations were handed over to the Nepali government in 2008, the government transferred the onus to the Environment and Public Health Organization. However, a misunderstanding between the government and ENPHO led the stations to be closed in 2009.

Therefore, when the 17th World Clean Air Congress, which was held in Busan of Korea from 29 August to 2 September this year, selected Kathmandu for launching air quality improvement programs as well as air quality ranking system, the project was warmly received.

Kathmandu Metropolitan City Office reported that only five cities from the whole of Asia were selected for the project to improve air quality, namely from Japan and the Philippines. "It means the highest standard of scientific air quality researches will be conducted in Nepal by international organizations.

The report of Kathmandu's air quality will be presented during the 18th World Air Congress in 2018." a participant of Congress and chief of Environment Management Division of KMC, Rabin Man Shrestha, told The Himalayan Times.

He stated that this is an opportunity to get reliable data on air pollution and opportunity to make clean eco-friendly mechanism for the government of Nepal. "The main benefit of this program is that we will have exact and reliable data on the air quality of Kathmandu," Division chief Shrestha added, "International studies not only check the pollution levels but also infrastructure development and environment-friendly activities in the capital city."

While the available data and regular air quality monitoring system in Nepal is questionable, in recent times, the government of Nepal has resumed air quality monitoring in the Kathmandu Valley by installing a station at Ratnapark seven years after the previous monitoring stations were shut down.

64. Volkswagen to Fight 'Unnecessary' ACCC Proceedings

Volkswagen Australia boss Michael Bartsch insists the company has not breached Australian emission standards. Volkswagen Australia is standing firm in the face of Federal Court proceedings against it that could cost it millions of dollars, insisting it remains unaware of having broken any Australian laws or emissions standards.

The Australian Competition and Consumer Commission (ACCC) last week instituted the proceedings against Volkswagen Australia and parent company Volkswagen Aktiengesellschaft for “alleged serious and deliberate breaches of the Australian Consumer Law”. These include “making false or misleading representations and engaging in conduct liable to mislead the public in relation to diesel vehicle emissions”.

The ACCC action comes almost a year since the “Dieselgate” scandal erupted in the US, when the United States Environmental Protection Agency (EPA) issued a notice of violation of the Clean Air Act to Volkswagen after it was found it had intentionally programmed turbocharged direct injection (TDI) diesel engines to activate certain emissions controls only during laboratory emissions testing.

Volkswagen will contest the Australian Federal Court action, which it described as unnecessary.

In a statement, the VW said the best outcome for customers whose vehicles are affected is to have the voluntary recall for emissions control software updates installed.

The company’s stance reaffirms Volkswagen Australia managing director Michael Bartsch’s views on the matter from two weeks before the ACCC announcement, when he appeared confident of a resolution. Speaking at a company luncheon with motoring journalists and representatives in Melbourne last month, Bartsch stressed that US and Australian emissions testing regimes were very different and blamed the ACCC and the Department of Development & Research (DIDR) for the delay in the recall of 100,000 affected vehicles to “fix” the software.

“We have had the fixes endorsed by the KBA (Germany’s Federal Motor Transport Authority) for 70 percent of our vehicles with the DIDR since June 2nd,” Bartsch said.

“There are some 77 primary markets in the world that homologate under the EU standard. Seventy six of those countries have accepted the KBA endorsed fixes that have been rolled out ... there’s only one country that hasn’t, that’s Australia.”

“We’re expecting and we’re hoping to get the release on those fixes in the next week but it now lies in the court of the DIDR and the ACCC.”

Bartsch appeared hopeful of a resolution, saying he thought the basic philosophy of the ACCC and Volkswagen were the same. “We both agree that the best interests of the consumers is served by getting the vehicles fixed and getting them fixed as soon as possible,” he added.

His confidence was at odds with ACCC chairman Rod Sims, who said he had found discussions with Volkswagen regarding the proceedings to be “difficult”. “I guess the Volkswagen chief executive has been quoted as saying they don’t believe they have breached Australian law, so that has been the starting point,” Sims told Fairfax Media.

"It has not been easy, it's been difficult to get information and the cooperation we would have hoped for."

The ACCC says the Australian Design Rules implement international standards that regulate the emission of NOx (Nitrogen Oxide) from motor vehicles, but Bartsch said cars sold in Australia are tested to European Union standards which measure Carbon Dioxide (CO2) emissions and fuel economy.

“The legislation that drives emission standards in the United States driven by CARB (California Air Resources Board) and managed by the US EPA focuses on NOx as the primary consideration. The EU model focuses on CO2 and fuel economy – different priorities,” he said.

Bartsch, who took the reins at Volkswagen Australia just as the Dieselgate scandal erupted in the US last year, insisted that all the vehicles named in the ACCC proceedings had exceeded the standard for vehicles sold in Australia, using the Amarok ute as an example of why the US Dieselgate situation isn't directly relatable with Australia.

He explained that Amaroks imported from Argentina were legal in Australia under EU4 regulations where the maximum nitrogen oxide output allowed is 390grams per kilometer driven. He said the Amarok was homologated to the higher EU5 standard, which allows for 280grams per kilometer driven, and only produced 220 to 230 grams. “So the car was homologated substantially below the legislative requirements of Australia.”

He added when the Amarok had the emissions software fixed according to the rectification protocols approved by the KBA it still came out at 220 to 230 grams of nitrogen oxide per kilometer driven.

“To put that into context with the US, that two-liter motor in the US under the CARB legislation – the maximum nitrogen oxide output allowed is 30grams. So you can see that as a consequence of the homologation protocols it's two very, very different legislative environments.”

The ACCC declined to respond to Bartsch's explanation “as the matter is now before the court”, but on announcing the action Sims said consumers rightly expect that their vehicle's emissions would operate as advertised. “We allege that this was not the case with more than 57,000 vehicles sold in Australia by Volkswagen over a five-year period.

“We expect higher standards of behavior from all companies that supply to Australian consumers,” Sims said.

SOUTH AMERICA

65. Santiago to Ban Firewood, Limit Cars Built Before 2011

Chile is taking new measures to clean up the air in its capital, banning firewood in Santiago and restricting when older gas and diesel cars can use the city roads, Environment Minister Pablo Badenier said October 4. The plan, approved unanimously by the Ministerial Sustainability Council, will replace the existing plan known as Supreme Decree No 66. While that plan focused on particulate material measuring up to 10 micrometers in diameter, the new plan aims to reduce emissions of fine particulate matter—measuring less than 2.5 micrometers—by around 60 percent.

In a statement, the ministry noted that while annual concentrations of PM-2.5 have fallen sharply during the past 25 years, the city had more than 40 critical episodes last year when dust levels reached harmful levels. “This is the first plan created for the metropolitan region to tackle fine particulate material allowing us to focus on the most harmful contaminant,” the minister said.

The government estimates that domestic use of firewood accounts for 39 percent of PM-2.5 emissions. The use of firewood for domestic cooking and heating will be banned beginning May

1, 2017, in the province of Santiago and the neighboring districts of Puente Alto and San Bernardo. About 5 percent of homes in Santiago use firewood stoves for heating.

Heaters using pellets will be exempt from the ban, but burning must be halted when contamination levels reach pre-emergency or emergency levels.

The plan will place tighter restrictions on vehicles and their use, especially during the critical winter months of May to August, when cold air traps emissions close to the surface. Key vehicle related actions include:

- A rolling weekday ban will be imposed inside Santiago's Americo Vespucio beltway on 20 percent each day of gas and diesel vehicles bought before September 1, 2011.
- Emissions limits for medium and light vehicles also will be tightened and economic incentives will be provided for low- and zero-emissions vehicles.
- Buses operating in Santiago will have to comply with the Euro VI standard within two years of the plan coming into force, while trucks older than 12 years will be banned from transiting inside the beltway.
- Off-road and construction machinery will have to fulfill tighter emissions standards and technological requirements will be incorporated into tenders for public construction projects.

Tighter emissions standards will be introduced for industrial sources, with large sources required to cut dust emissions by some 80 percent. In addition, 57 large industries in Santiago must cut PM-2.5 emissions by 30 percent.

Limits will be placed on emissions of ammonia by agribusiness and new emissions standards imposed for diesel generators. And stubble burning will be banned throughout the region within four years.

MIDDLE EAST

66. Air Pollution Improving in Israel

Reductions of up to 52% in the emissions of air pollutants were registered on more than 540 of the biggest enterprises in Israel between 2012 and 2015, according to figures published by the Ministry of Environmental Protection.

However, according to the same figures, emissions of nitrogen oxides and sulfur oxides are still 1.3 and 4.4 times higher respectively than EU countries. 87% of sulfur oxide emissions are the result of the operation of coal-fired power plants which are concentrated in Ashkelon and Hadera and still lack advanced pollution control systems.

Additionally, the amount of nitrogen, phosphorous and organic carbon discharged into sewage is also much higher relative to EU countries.

However, the flow of pollutants into the Mediterranean has also dramatically decreased between 2012 and 2015 as a result of reducing the amount of activated sludge discharged into the sea by

the Gush Dan wastewater treatment plant. A reduction in the amount of activated sludge was a requirement of the commission for discharge permits. All activated sludge discharge will cease by the end of 2016 with the completion of a new treatment facility.

Further improvements occurred in the quality of treated wastewater, with a reduction of 11% recorded in the amount of salt present in the treated wastewater between 2013 and 2015. This reduction is due to an increase in the use of desalinated water, with 50% of the total amount of water supplied to consumers being desalinated.

Minister of Environmental Protection, Ze'ev Elkin, commented on the figures, saying "The ministry is implementing the principles of transparency and public access to information. It is a tool used for setting policy and making decisions for us, as well as for citizens to get involved and make a difference. We plan to continue to give the public access to information and to reduce emissions of pollutants to the environment."

67. Iran Reportedly To Increase Shipments of Cleaner Diesel From 2017

Iran is aiming to increase export volumes of cleaner diesel from next year as its refineries are upgraded, even as it cuts its reliance on imports, industry sources familiar with the matter said recently.

Iran has expanded its presence in the global oil market after international sanctions were lifted in January, aggressively marketing and increasing diesel shipments. The additional supply may add to a diesel supply glut in Asia.

Diesel exports from National Iranian Oil Company (NIOC) containing 500 parts-per-million (ppm) of sulfur will likely make up about half of its overall diesel shipments from early next year, compared with about less than 10 percent currently, one of the sources said.

It currently ships out about 500,000 tons of gasoil with 1 percent sulfur, or 10,000 ppm, which is mainly exported to the Middle East, with small volumes sent to Singapore, Africa and the Mediterranean, the source said, declining to be named as he was not authorized to speak with the media.

"(NIOC) is aiming to increase its low sulfur (diesel) exports and reduce the high sulfur to about 50-50 as refineries are upgrading," he added.

The company ceased imports of gasoil from April 2015 and was balanced with its supply and demand until January when it stepped up exports of the fuel, he said. The volumes are sold through spot and term contracts, he added, declining to reveal details of term buyers.

The 1 percent sulfur fuel is mainly used for blending or as a feedstock in secondary refining units. But, the cleaner 500 ppm sulfur diesel is used in the transport and industrial sectors in many Asian countries including Vietnam and Bangladesh.

Iran's increase of cleaner diesel is expected to weigh on Asian gasoil margins, which are already hovering near six-year lows, traders said.

Still, as winter approaches, Iran's gasoil exports are likely to decline over the next few months as the fuel is used in the domestic market for power generation, the source added.

NIOC said earlier it will reduce its gasoline imports and condensate exports once the first phase of its Gulf refinery starts up by end-March 2017.

AFRICA

68. Study Finds Air Pollution in Africa More Deadly Than Malnutrition

Africa's air pollution is causing more premature deaths than unsafe water or childhood malnutrition, and could develop into a health and climate crisis reminiscent of those seen in China and India, a study by a global policy forum has found.² The first major attempt to calculate both the human and financial cost of the continent's pollution suggests dirty air could be killing 712,000 people a year prematurely, compared with approximately 542,000 from unsafe water, 275,000 from malnutrition and 391,000 from unsafe sanitation.

While most major environmental hazards have been improving with development gains and industrialization, outdoor (or "ambient particulate") air pollution from traffic, power generation and industries is increasing rapidly, especially in fast-developing countries such as Egypt, South Africa, Ethiopia and Nigeria.

"Annual deaths from ambient [outdoor] particulate matter pollution across the African continent increased by 36% from 1990 to 2013. Over the same period, deaths from household air pollution also continued to increase, but only by 18%", said a researcher at the Organization for Economic Co-operation and Development (OECD).

For Africa as a whole, the estimated economic cost of premature air pollution deaths in 2013 was roughly \$215bn (£175bn) a year for outdoor air pollution, and \$232bn for household, or indoor, air pollution.

The study's author, Rana Roy, is concerned by the pace at which outdoor air pollution is growing in Africa, bucking the downward trend in most countries. Used cars and trucks imported from rich countries are adding to urban pollution caused by household cooking on open fires.

"This mega-trend is set to continue to unfold throughout this century. It suggests that current means of transportation and energy generation in African cities are not sustainable," said Roy. "Alternative models to those imported from industrialized economies, such as dependence on the individual automobile, are necessary.

"It is striking that air pollution costs in Africa are rising in spite of slow industrialization, and even de-industrialization in many countries. Should this latter trend successfully be reversed, the air pollution challenge would worsen faster, unless radically new approaches and technologies were put to use.

"The 'new' problem of outdoor air pollution is too large to be ignored or deferred to tomorrow's agenda. At the same time, Africa cannot afford to ignore the 'old' problem of household pollution or to consider it largely solved: it is only a few high-income countries – Algeria, Egypt, Libya, Mauritius, Morocco, Seychelles and Tunisia – that can afford to view the problem of air pollution as being a problem of outdoor particulate pollution alone."

² Dr Rana Roy, Consulting Economist, "The Cost of Air Pollution in Africa", OECD Development Centre Working Papers, 2016

The study stresses that there is not nearly enough knowledge of the sources of air pollution and its impact in much of Africa. It quotes UK scientist Mathew Evans, professor of atmospheric chemistry at York University, who is leading a large-scale investigation of air pollution in west Africa.

“London and Lagos have entirely different air quality problems. In cities such as London, it’s mainly due to the burning of hydrocarbons for transport. African pollution isn’t like that. There is the burning of rubbish, cooking indoors with inefficient fuel stoves, millions of steel diesel electricity generators, cars which have had the catalytic converters removed and petrochemical plants, all pushing pollutants into the air over the cities. Compounds such as sulfur dioxide, benzene and carbon monoxide, that haven’t been issues in western cities for decades, may be a significant problem in African cities. We simply don’t know.”

Whereas China has reached a level of development that has allowed it to concentrate on solving air pollution, most African countries must grapple with several major environmental burdens at the same time, said the report.

“[They] are not in the position of a China, which can today focus on air pollution undistracted by problems such as unsafe water or unsafe sanitation or childhood underweight,” said Roy.

Henri-Bernard Solignac-Lecomte, head of the Europe, Middle East and Africa unit at the OECD, said the paper made a double case for action. “Air pollution in Africa increasingly hurts people and hinders economic development. Reducing it requires urgent action by governments to change the unsustainable course of urbanization. Indeed, Africa urbanizes at a very fast pace: today’s 472 million urban dwellers will be around a billion in 2050. Today’s investment choices will have decade-long impacts on urban infrastructure and the quality of life of urbanites.

“Bold action to improve access to electricity, using clean technologies such as solar power, can contribute to reducing the exposure of the poorer families to indoor smog from coal or dung-fired cooking stoves.

“As for outdoor pollution, African economies would be well advised to learn from the experience of industrialized countries, for example by developing mass public transportation systems – like Rabat or Addis-Ababa are doing with their tramways.”

Roy warned that the human and economic costs of air pollution might “explode” without bold policy changes in Africa’s urbanization policies.

He concluded with a call for urgent international action: “If Africa’s local air pollution is contributing to climate change today, at a time when its population stands at 1.2 billion, or 16% of the world’s population, it is safe to suppose that ... it is likely to contribute considerably more when its population increases to around 2.5 billion, or 25% of the world’s population in 2050, and thence to around 4.4 billion, or 40% of the world’s population in 2100.”

GENERAL

69. Early EU Action Puts Paris Climate Pact over Finish Line

The Paris climate agreement formally crossed the finish line Oct. 5 when the European Union fast-tracked ratification documents to the United Nations days earlier than expected, clearing the

path for countries to begin writing rules to implement the deal when the next UN climate summit opens Nov. 7 in Morocco.

UN officials “expect the [Paris] Agreement to enter into force on 5 November,” UN spokesman Dan Shepard told reporters, less than 10 months after the deal was reached by nearly 200 nations in Paris.

President Barack Obama, who pushed for quick global adoption of the climate deal, said its formal adoption “gives us the best possible shot to save the one planet we’ve got,” in remarks from the White House Rose Garden. “Today the world has officially crossed the threshold for the Paris Agreement to take effect,” Obama said, adding that he hopes it will be seen as the turning point for global progress on climate change. He also urged nations that have yet to ratify the pact—still well over half of the nearly 200 nations that signed on to the deal in December—to do so, and as quickly as possible.

The EU action will ensure it is European countries—which have often led in the global push for climate action, but in this case essentially are last in a line of countries that included the U.S., China, India, Brazil and even many small island nations—will be remembered as the linchpin in making the deal operational.

The EU’s fast-track move means a total of 72 countries representing 56.75 percent of the world’s greenhouse gas emissions have now deposited instruments of ratification or acceptance for the Paris document with the UN. To go into effect, the pact needed ratification by at least 55 countries representing 55 percent of the world’s emissions. The EU’s move Oct. 5 effectively allowed the deal to go forward even though only seven of its 28 member nations—Austria, France, Germany, Hungary, Malta, Portugal and Slovakia—ratified the Paris deal.

The Paris pact is meant to keep global temperatures from rising more than 2 degrees Celsius (3.6 degrees Fahrenheit) later this century compared to the pre-industrial era. Developed and developing nations in the run-up to the 2015 Paris talks put pledges on the table to address their greenhouse gas emissions, actions that are to be updated and strengthened over time.

The Oct. 5 announcement was not welcomed by all; congressional Republicans for example remain largely opposed to the U.S. participation in the Paris deal. Obama’s decision to use his executive authority to sign the U.S. on to the deal is still controversial among those Republicans, who argue the deal should have been submitted to the Senate for ratification.

Obama “acted unlawfully by signing an international treaty without Senate ratification, as required by the Constitution,” House Speaker Paul Ryan (R-Wis.) said in a prepared statement.

70. Airline Industry Adopts UN Pact to Limit Emissions

A United Nations accord to limit emissions from international air travel was formally adopted, the first global climate accord targeting a single industry. After nine days of debate, delegates from 190 nations approved the measure on October 6th in Montreal, requiring companies to offset emissions growth after 2020 by funding environmental initiatives. It is the first global climate accord adopted since the Paris Agreement, which will enter into force next month.

At least 60 nations representing more than 80 percent of aviation traffic have pledged to voluntarily participate in the system when it begins in 2020, including the U.S., China and most of Europe.

The deal, which has drawn criticism from India and Russia, becomes mandatory for most nations in 2027.

“What we have been able to do today is a bold decision. It is really a historic moment,” said Olumuyiwa Benard Aliu of Nigeria, president of the UN aviation agency’s council.

The UN’s International Civil Aviation Organization estimates that the agreement will cost airlines between \$5.3 billion and \$23.9 billion annually by 2035. Exhaust from international flights accounts for about 2 percent of global greenhouse gases and is forecast to triple by 2050.

The air industry was largely omitted from the Paris accord because delegates were concerned that divvying up responsibility for global routes could derail the broader deal.

The 15-year agreement would not force airlines to cut their pollution. Instead, companies would compensate for any emissions growth after the accord begins in 2020 by buying credits to support renewable energy development, forest preservation or other environmental endeavors.

Airlines supported the accord. Despite the cost, companies said a single international standard would be cheaper and easier to follow than a patchwork of local programs. Paul Steele, senior vice president of the International Air Transport Association, trade association for the world’s airlines, called the passage “historic.” “Aviation is an industry at the forefront of change,” Steele said.

Environmentalists pushed for the deal, calling it an important first step that can be improved over time. But they criticized the final proposal for relying on voluntary participation during the first six years. And they said they would have preferred an actual emissions cap or cut over allowing carriers to offset emissions by buying credits.

“This agreement doesn’t do everything,” said Annie Petsonk, international counsel for the Environmental Defense Fund. “But it is the world’s first limit on the net CO2 emissions of any entire global industry sector. And that’s very big.”

71. Deal Cutting Refrigerant Climate Gases Agreed; Can Be Periodically Strengthened

Negotiators from nearly 200 nations who reached a deal to cut 80 percent of super-polluting hydrofluorocarbons by midcentury also agreed to periodically revisit whether to reduce climate emissions even more as new control technologies come online.

The global deal reached October 15 targets consumption and production of HFCs used in air conditioning and refrigeration that, if left unchecked, would have an outsized impact on raising global temperatures. All countries under the deal reached after a week of talks in Kigali, Rwanda, agreed to phase down HFCs. But the U.S. and other richer industrialized countries, many of which already are cutting HFCs, essentially will go first. They agreed to a 10 percent reduction in the refrigerant beginning in 2019.

Developing countries were given longer to take action, with China and most other developing economies agreeing to a freeze in 2024; India and a few other nations fought for and won a 2028 freeze date.

The Kigali amendment calls for periodic reviews of the global action phasing down HFCs every five years; a technical panel is to determine whether technologies have emerged to allow “any needed adjustments” in agreed-upon reductions, according to a White House fact sheet.

Under the deal, the U.S. and other richer nations agreed to begin ratcheting down HFCs in 2019 and continue doing so until 2036. At that time, the developed nations are to achieve an 85 percent cut from 2011–2013 production and consumption levels. President Barack Obama pursued the global deal on HFCs to complement the broader climate accord reached in Paris 10 months ago. Obama called the Kigali deal “an ambitious and far-reaching solution to this looming crisis” that makes “a significant contribution towards achieving the goals we set in Paris.”

But the deal provides a sort of sliding scale for developing nations, with one group—China, Latin America, Africa and island nations—agreeing to a freeze by 2024. That group covers the bulk of developing nations around the world, more than 100 total, according to the World Wildlife Fund.

A second tier of developing nations headed by India, which sought to delay any HFC freeze until about 2030 given its increasing demands for air conditioning for its burgeoning middle class, conceded to a slightly earlier freeze date of 2028 in the deal. Others in that group were given until 2028 to take action include Iran, Iraq, Pakistan and some Persian Gulf nations.

The deal was reached as an amendment to the Montreal Protocol, which has been successfully used to phase out substances that deplete the ozone layer. The Kigali negotiations served as the 28th Meeting of the Parties to the Montreal Protocol on Substances That Deplete the Ozone.

Hydrofluorocarbons originally were developed as alternatives to ozone-depleting chlorofluorocarbons (CFCs) and hydrochlorofluorocarbons (HCFCs). But HFCs were later determined to be a potent greenhouse gases with long atmospheric lifetimes and thus a significant contributor to global warming. Consequently, HFCs can be hundreds or even thousands of times more potent than carbon dioxide in contributing to climate change.

Steep reductions in HFCs will require nations to move to alternatives with a lower global warming impact and increase energy efficiency, particularly in air conditioning units. Already existing more climate-friendly HFC alternatives include HFO-1234yf, developed jointly by Honeywell and DuPont.

The Rwanda deal was seen as icing on the cake for climate action, coming less than a year after nearly 200 nations reached the first truly global deal in Paris to address climate change, but also just weeks after a deal was announced to cut international aviation emissions of carbon dioxide. The aviation deal was reached October 6 after roughly two decades of negotiations under the UN International Civil Aviation Organization.

Regine Guenther, interim leader of WWF’s Global Climate and Energy Practice, said the October 15 Kigali deal on HFCs “sends a powerful signal that our governments are serious about tackling climate change, coming as it does on the heels of the ratification of the Paris Agreement, a new deal to cap aviation emissions and just weeks before UN climate talks resume” in Morocco.

The Morocco talks got a boost with faster-than-anticipated ratification of the Paris Agreement this year by enough developed and developing nations to ensure it is formally in place in time for the two-week UN climate change conference in Marrakech, which opens Nov. 7. At the summit, countries will begin the first negotiations on how to implement the Paris Agreement, including a

kind of rule book countries will use to measure and verify whether they make good on their pledges to cut emissions.

While HFCs are today responsible for only about 1 percent to 2 percent of global warming, they are the fastest growing climate-related emissions.

If left unaddressed, global emissions of HFCs would grow to the equivalent of 19 percent of carbon dioxide emissions in 2050, according to the White House; steep reductions during the coming decades could prevent nearly a half-degree Celsius of warming this century, the White House projects.

72. IMO Decides to Require Ships to Reduce Sulfur in Fuel by 2020

Ships worldwide will be required by 2020 to significantly reduce the amount of sulfur oxide emissions that can cause heart and lung diseases, the International Maritime Organization announced October 28. Under the new rules, ships will have to limit the use of fuel oil with content of sulfur to no more than 5,000 parts per million-or 0.5 percent, down from the current cap of 35,000 parts per million, or 3.5 percent, by January 1, 2020.

Currently, only ships sailing in so-called emission control areas—located 200 miles off designated North American coasts, North and Baltic seas, and the Caribbean—face tougher restrictions on the sulfur content in their fuel oil of no more than 1,000 parts per million-or 0.1 percent.

The worldwide reductions in sulfur oxide (SO_x) emissions are “expected to have a significant beneficial impact on the environment and on human health, particularly that of people living in port cities and coastal communities,” the IMO’s Secretary-General Kitack Lim, said in a statement.

The move could help to prevent some 200,000 premature deaths due to less toxic fumes, mainly in coastal areas in the developing world, according to Transport & Environment, citing research from the U.S. and Finland.

The IMO’s Maritime Environment Protection Committee (MEPC) decided to implement the global sulfur cap at the conclusion of its weeklong meeting in London which took place October 24–28.

The 2020 deadline originally was discussed in 2008, when the IMO adopted amendments to Annex VI to the International Convention for the Prevention of Pollution From Ships, known as the MARPOL Convention

But the IMO said when it adopted the amendments, it also agreed to carry out a review by 2018 to determine whether enough low-sulfur content would be available by 2020.

The International Chamber of Shipping, whose member shipping companies operate more than 80 percent of the world’s merchant tonnage, welcomed the MEPC’s “clear decision” that “will deliver a dramatic reduction” in sulfur oxide emissions.

The IMO said ships will be able to meet the new requirements that cover fuel used on board, in main and auxiliary engines and boilers by using low-sulfur compliant fuel oil, gas that emits only a negligible amount of sulfur oxide, or methanol, which some ships are using on some short sea services.

Ships also could meet the sulfur oxide emissions requirements by using approved equivalent methods, such as exhaust gas cleaning systems or “scrubbers,” which “clean” the emissions before they are released into the atmosphere, the IMO said.

Bill Hemmings, shipping director at Transport & Environment, said, said the MEPC’s “landmark” decision could save millions of lives in the coming decades. But the focus of the IMO and the global shipping sector “should shift towards implementing this decision, which is a big issue since it’s not yet clear who should police ships on the high seas, and how,” he said.

As anticipated earlier this year, the MEPC also announced in a separate October 28 statement that it has formally adopted new requirements for ships of more than 5,000 gross tons to collect data about their annual carbon dioxide emissions and fuel consumption.

The MEPC agreed to make the stipulation mandatory for ship operators at its previous meeting in the spring.

73. Shipping Firms Call for IMO to Regulate CO2

A group of more than 50 leading maritime firms has issued a public call for “policies that drive investment in cost-effective greenhouse gas emission reduction efforts within the industry.” The group, which includes leading firms like Maersk, Wartsila, AkzoNobel and GAC, emphasized that shipping would have an important role in keeping global temperature increases below two degrees Celsius, the target agreed in the Paris COP21 accords.

The open letter called for action beyond current IMO standards on fuel efficiency (the EEDI and SEEMP requirements), noting that shipping’s emissions will substantially increase in coming years in spite of current international regulations.

The letter echoes similar calls from the European Community Shipowners Association and the Sustainable Shipping Initiative (SSI); however, it is not quite as detailed and far reaching as SSI’s platform, which includes a call for set emissions targets, enforcement mechanisms and rapid implementation. SSI’s membership overlaps closely with the undersigned firms on the new open letter.

During the negotiations at the COP21 climate summit in Paris last year, the IMO successfully lobbied to retain oversight of shipping’s emissions. Individual nations made greenhouse gas control commitments under the treaty, but international shipping and aviation were exempted.

At the last meeting of the IMO MEPC, a small group of developing nations blocked a work plan for regulating greenhouse gas emissions, much to the consternation of European shipping delegations and the IMO leadership. While it did not move towards a firm plan, the committee passed mandatory requirements for ships to record and report their fuel consumption, a measure seen as a step towards later emissions regulation.

The European Parliament is considering its own measures to regulate CO2 emissions for vessels calling at European ports, putting additional pressure on IMO to act now. European ship-owners have long advocated for an even regulatory playing field, a global set of standards that imposes equal requirements on all firms – rather than leaving regulation to IMO member states, which may create varying compliance costs for operators depending on their nationality.

Lloyd's Register (LR) and Shipping in Changing Climates, a cross-industry research project, released a study recently that details a number of potential pathways for the shipping industry's transition to a low carbon future. Its Low Carbon Pathways 2050 is intended to contribute to the MEPC 70 deliberations with three scenarios for emissions controls through 2050.

Among other conclusions, the LR study warns that "a substitute for fossil fuel will still be required as energy efficiency improvements alone will not be sufficient in the medium to long term" in order to meet targets.

74. Alzheimer's Link? Study Finds Air Pollution Particles in Human Brain

Microscopic magnetic particles from air pollution have been discovered in human brains, according to a new study recently published. Analysis of brain tissue from 37 people – aged between three and 92 and from Mexico City and Manchester – was undertaken, with researchers finding "abundant" magnetite nanoparticles, according to a news release from Lancaster University, whose researchers led the project.

The findings are significant because researchers believe the magnetic particles they found could potentially be a cause of Alzheimer's disease. Magnetite – which is toxic – has been linked to the production of free radicals in the brains of humans, the university said, which are in turn linked with diseases such as Alzheimer's.

"The particles we found are strikingly similar to the magnetite nanospheres that are abundant in the airborne pollution found in urban settings, especially next to busy roads, and which are formed by combustion or frictional heating from vehicle engines or brakes," Barbara Maher, from the Lancaster Environment Center, said in a statement. "Our results indicate that magnetite nanoparticles in the atmosphere can enter the human brain, where they might pose a risk to human health, including conditions such as Alzheimer's disease," Maher went on to add.

The findings of the study, which involved researchers from Oxford, Glasgow, Manchester and Mexico City, were published in the Proceedings of the National Academy of Sciences.

David Allsop, a leading Alzheimer's researcher from Lancaster University's Faculty of Health and Medicine, said the study had opened up "a whole new avenue for research into a possible environmental risk factor for a range of different brain diseases."

According to the Alzheimer's Society, the total cost of dementia to the U.K. is £26 billion a year.

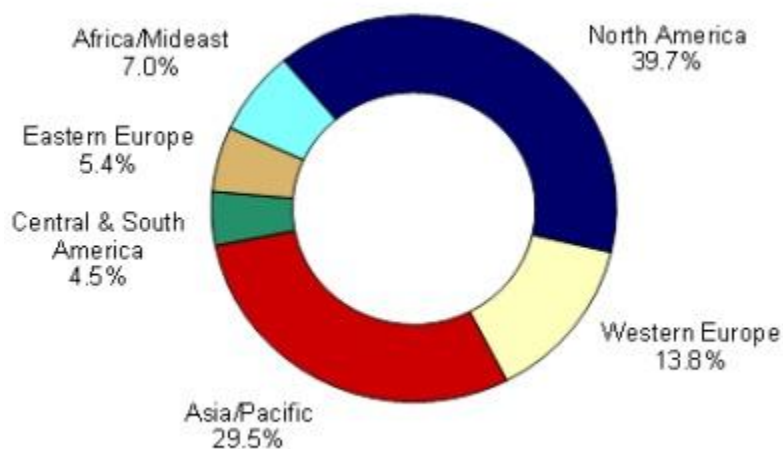
"Magnetite, a form of iron oxide, has previously been seen in amyloid plaques in the brains of people who have died with Alzheimer's disease," Clare Walton, research manager at the Alzheimer's Society, said in a statement. "This magnetite is generally thought to come from iron found naturally in the brain and there is no strong evidence to suggest that it causes Alzheimer's disease or makes it worse," she added.

Walton went on to explain that while the study offered convincing evidence that magnetite from air pollution could get in to the brain, it did not "tell us what effect this has on brain health or conditions such as Alzheimer's disease."

"The causes of dementia are complex and so far there hasn't been enough research to say whether living in cities and polluted areas raises the risk of dementia. Further work in this area is important, but until we have more information people should not be unduly worried."

75. Global Market for Refining Catalysts to Reach \$4.7 Bn By 2020

The global demand for refining catalysts is forecast to grow 3.6 percent per year to \$ 4.7 billion in 2020 from \$ 4 billion in 2015, according a new study from the Freedonia Group, a Cleveland-based industry research firm. This market includes catalysts used in fluid catalytic cracking, hydroprocessing, alkylation, reforming, and other catalytic applications.



Source: The Freedonia Group

While global demand for refining catalysts in all applications will experience healthy growth, fluid catalytic cracking catalysts will post the fastest growth. Fluid catalytic cracking catalysts will also remain the largest market for refining catalysts by value.

The refining catalyst markets in developed countries are mature, with strong competition among catalyst manufacturers. To maintain and expand market share in these countries, manufacturers invest significant

time and resources in the development of catalysts that can function at higher temperatures & pressures; lower costs by increasing crude oil feed rate or catalyst life; and produce higher quality end products.

The continued introduction of new catalysts will sustain growth in the mature markets of North America, Western Europe, and Japan. However, Christine O'Keefe, analyst of Freedonia, noted, that the established nature of fuel sulfur regulations in these markets, declining gasoline consumption, and decreasing refined products output will restrain stronger gains.

In addition, the changing nature of the global crude oil supply, particularly the increased availability in the US of light oil crudes that are lower in sulfur content, may restrain growth in hydrotreating catalyst consumption in more developed markets. Opportunities will exist, though, for catalysts that allow refiners flexibility in responding to the changing nature of the crude oil supply.

76. WHO Releases Country Estimates On Air Pollution Exposure and Health Impact

A new WHO air quality model confirms that 92% of the world's population lives in places where air quality levels exceed WHO limits. Information is presented via interactive maps, highlighting areas within countries that exceed WHO limits. "The new WHO model shows countries where the air pollution danger spots are, and provides a baseline for monitoring progress in combatting it," says Dr.Flavia Bustreo, Assistant Director General at WHO.

It also represents the most detailed outdoor (or ambient) air pollution-related health data, by country, ever reported by WHO. The model is based on data derived from satellite measurements,

air transport models and ground station monitors for more than 3000 locations, both rural and urban. It was developed by WHO in collaboration with the University of Bath, United Kingdom.

Some 3 million deaths a year are linked to exposure to outdoor air pollution. Indoor air pollution can be just as deadly. In 2012, an estimated 6.5 million deaths (11.6% of all global deaths) were associated with indoor and outdoor air pollution together.

Nearly 90% of air-pollution-related deaths occur in low- and middle-income countries, with nearly 2 out of 3 occurring in WHO's South-East Asia and Western Pacific regions.

Ninety-four per cent are due to noncommunicable diseases – notably cardiovascular diseases, stroke, chronic obstructive pulmonary disease and lung cancer. Air pollution also increases the risks for acute respiratory infections.

"Air pollution continues take a toll on the health of the most vulnerable populations – women, children and the older adults," adds Dr.Bustreo. "For people to be healthy, they must breathe clean air from their first breath to their last."

Major sources of air pollution include inefficient modes of transport, household fuel and waste burning, coal-fired power plants, and industrial activities. However, not all air pollution originates from human activity. For example, air quality can also be influenced by dust storms, particularly in regions close to deserts.

The model has carefully calibrated data from satellite and ground stations to maximize reliability. National air pollution exposures were analyzed against population and air pollution levels at a grid resolution of about 10 km x 10 km.

"This new model is a big step forward towards even more confident estimates of the huge global burden of more than 6 million deaths – 1 in 9 of total global deaths – from exposure to indoor and outdoor air pollution," said Dr.Maria Neira, WHO Director, Department of Public Health, Environmental and Social Determinants of Health. "More and more cities are monitoring air pollution now, satellite data is more comprehensive, and we are getting better at refining the related health estimates."

The interactive maps provide information on population-weighted exposure to particulate matter of an aerodynamic diameter of less than 2.5 micrometers (PM2.5) for all countries. The map also indicates data on monitoring stations for PM10 and PM2.5 values for about 3000 cities and towns.

"Fast action to tackle air pollution can't come soon enough," adds Dr.Neira. "Solutions exist with sustainable transport in cities, solid waste management, access to clean household fuels and cook-stoves, as well as renewable energies and industrial emissions reductions."

In September 2015, world leaders set a target within the Sustainable Development Goals of substantially reducing the number of deaths and illnesses from air pollution by 2030.

In May 2016, WHO approved a new "road map" for accelerated action on air pollution and its causes. The roadmap calls upon the health sector to increase monitoring of air pollution locally, assess the health impacts, and to assume a greater leadership role in national policies that affect air pollution.

WHO air quality model confirms that 92% of the world's population lives in places where air quality levels exceed "WHO's Ambient Air quality guidelines" for annual mean of particulate matter with a diameter of less than 2.5 micrometers (PM2.5). WHO guideline limits for annual mean of PM2.5 are 10 µg/m³ annual mean.

PM2.5 includes pollutants such as sulfate, nitrates and black carbon, which penetrate deep into the lungs and in the cardiovascular system, posing the greatest risks to human health.

This fall WHO is rolling out BreatheLife, a global communications campaign to increase public awareness of air pollution as a major health and climate risk. BreatheLife is led by WHO in partnership with the United Nations Environment Program (UNEP)-hosted Climate and Clean Air Coalition to Reduce Short-lived Climate Pollutants. The campaign stresses both the practical policy measures that cities can implement (such as better housing, transport, waste, and energy systems) and measures people can take as communities or individuals (for example, to stop waste burning, promote green spaces and walking/cycling) to improve our air.

77. UN Urges Biking, Walking to Fight Climate Change

Significant investment in biking and walking infrastructure is needed worldwide to combat climate change and address a highway death toll of more than 1 million people a year, the United Nations Environment Program said.

UNEP asked countries to earmark 20 percent of their transportation budgets on cycling and walking infrastructure, like bike lanes and walking paths, in a report released Oct. 20. It also urged countries to enact and enforce national and local policies for non-motorized transport. "For instance, South Africa, Tanzania, Chile, China and India have drafted high-quality engineering and construction designs for bicycle and pedestrian facilities but these are still regarded as guidelines rather than requirements," said the report.

Motor vehicles are responsible for a quarter of global carbon dioxide emissions and is the fastest growing sector in greenhouse gas emissions worldwide, said UNEP Executive Director Erik Solheim. In addition: "People are risking their lives every time they leave their homes, as about 50 percent of victims of traffic accidents globally are pedestrians, cyclists and motorcyclists," he said.

The report surveyed the progress toward safer walking and cycling infrastructure in 20 low- to middle-income countries across Africa, Asia and Latin America, where compared with high-income countries, twice as many people die in road traffic accidents.