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Climate Change Economics; ‘Big Ticket’ Items for Copenhagen

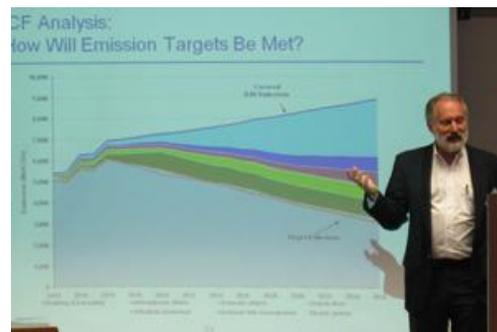
The end is drawing near for much detailed preparation for climate talks and negotiations scheduled to take place in Copenhagen the second two weeks of December. Many in the international community as well as within U.S. borders have been hoping for radical change of the U.S. position under the new governmental administration.

With legislation such as the Waxman-Markey and Kerry-Boxer bills in various stages of review and approval, some people think this is a start, but not the momentum they were hoping for at this point in the game. Opinion polls and surveys conducted within the United States show the economy and healthcare are more important than climate change issues, which ranked higher earlier in the year.

Earlier this week, representatives with the Germany and Denmark embassies in Washington, the United Nations Environment Program, the Center for Naval Analysis, Worldwatch Institute, academics and others spent two days meeting with German and U.S. journalists in a transatlantic media dialogue and networking seminar to discuss climate change and climate policy in Europe and the U.S.: *Opportunities and Challenges in the Run-up to the Copenhagen Summit and Beyond.*

Ecologic Institute, with establishments in Berlin, Brussels, Vienna and Washington, D.C., was the organizing partner. The organization in conjunction with the German government and D.C.-based embassy in May and October hosted a similar event in Germany for journalists from countries including the United States, India, China, Estonia and Korea.

Panelists discussed national climate and energy policies in the United States and Germany; the state of science on climate change and the costs of inaction; the state of international climate change negotiations for a new climate protection



Joel Bluestein, president of Energy and Environmental Analysis Inc./ICF International in Fairfax, Va., demonstrated climate change economic modeling effects for ‘business as usual’ and changing habits noting costs are higher, in the long run, for not doing anything. Photos by Monique A. Hitchings

regime and prospects for successful outcomes; climate change and security; adaptation to climate change; green markets; innovation for climate change protection; climate change technologies; and ways to address the financial crisis with sustainable investment.

Joel Bluestein, president of Energy and Environmental Analysis Inc./ICF International in Fairfax, Va., and Gary Hufbauer, Reginald Jones Senior Fellow with the Peterson Institute of International Economics in Washington, D.C., addressed the economic factors of climate change, whether an economic stimulus or cost factor.

During their presentations, they touched on the impact of climate protection measures on employment and innovation in juxtaposition with the challenge of addressing carbon leakage and other possible negative effects. The duo also discussed climate protection technologies – the race toward technology-leadership and the potential for carbon capture and storage, smart grids, electric mobility, renewable energies and the ways in which the United States and Germany can teach and learn about these issues from the other.

“The largest source to lower cost reduction is the power sector,” Bluestein said as he showed ICF’s analysis about how emissions targets would be met during the next 20 to 40 years.

Bluestein constrained his model data to include products for a zero-emission economy, only including renewables, natural gas, carbon capture and storage (CCS) and similar technologies and energies.

“In our view, in terms of capacity, we do have a lot of natural gas, renewables. We have CCS and nuclear, but they come on much later. I think we will have more, not as much as the Energy Information Administration says, not in the next 10 years or so, but if you have this kind of policy I think over time you have these technologies [see photo with emissions slide],” he said.

“This is showing that the generation from 2011 to 2036 (this is coal, nuclear, natural gas, renewables) in 2011. In 2013, you can see gas is increasing, nuclear and renewables – renewables are increasing as well, nuclear is not increasing so fast, we see CCS, really starting after 2020; after 2030, all the coal is controlled by carbon capture. And then you start to see, after 2030, nuclear increasing.

“We have our internal debates about what we think the models should do. I personally think this starts to look like a plausible outcome. Again, up to 2036 with a combination of offsets and technologies.”

Hufbauer spoke next about the “big ticket” items he sees coming out of the Copenhagen meetings, which include: high pricing for carbon dioxide equivalent waste; nuclear energy use; agriculture and methane production offsets; measuring, reporting and verification; technology transfer; international financial support; and trading

“I cannot see the U.S. taking really serious action ... until we see the droughts and hurricanes and more of the Arctic melting and so forth than what we’ve seen so far. I don’t think all the models ... and so forth have really persuaded people to make the kind of sacrifices that are necessary” to slow down or help climate change, Hufbauer said.

“When I say serious action, I mean something that flattens out the trajectory of carbon dioxide emissions, which are now 450 ppm [some information points to 550 ppm]. Well I do think we need some more serious climate events – rising

sea levels would be good – and then we’ll get some action, but people responding in advance, I’m somewhat pessimistic.”

He noted that modeling is not very consistent or easy to understand and most likely is not the best way to look at what economics or trends could show in the future.

“The models are all over the place,” he said. “Not only the models of economic cost and the response in terms of power generation and other parts – building adaptation and so forth, but also the scientific models. There’s a fair range, and that enables legislators, who are inclined anyway to procrastinate, to procrastinate and be willing to procrastinate, and that’s kind of the mood I think we’re in at this point,” he said.

Hufbauer urged the German and European representatives in the room to help get the United States more involved in the international step toward climate change.

“I think we need US\$100 per ton of carbon dioxide equivalent – the quicker Europe gets up there the more inspiring it will be to the United States and the rest of the world; I really urge you to move in that direction,” he said.

Also, economic studies are important.

“You know that you don’t need to adjust at the border for a value-added tax because your exchange rate and your price system will adjust for you...everybody adjusts at the border for exactly the same reason that there is this political dynamic of adjusters of carbon pricing. Maybe we can ease it by example, but demonstration from Europe. I think that’s a political reality,” he said

Look for more coverage from this event in upcoming issues of *Global Refining & Fuels Today* as well as *FUEL* magazine’s December issue.



**Gary Hufbauer, Reginald Jones
Senior Fellow, Peterson Institute of
International Economics**

Monique A Hitchings

Public Policy

Dow, Denbury Ink Carbon Capture And Storage Deal

Anticipating future legislative crackdowns on greenhouse emissions, Dow Chemical and Denbury Onshore officials announced Nov. 12 that they've signed a memorandum of understanding to capture by-product carbon dioxide (CO₂) from Dow's ethylene oxide plant in Plaquemine, La.

"The project with Denbury is capital and cost-efficient for Dow and will significantly contribute to Dow's annual GHG [greenhouse gas] reduction goal," according to Dow.

By-product CO₂ from the plant would be shipped via Denbury's 320-mile "green" pipeline, targeted for completion in 2010. That line will run from Donaldsonville, La., to the Hastings Oil Field, south of Houston.

Dow's CO₂ capture project at Plaquemine is expected to be operational in mid-2011. "Additional opportunities for future CO₂ capture are being examined at several Dow sites," according to Dow officials.

Jack Peckham

Maryland Promotes Energy Efficiency

On Nov. 12, the Maryland Energy Administration (MEA) announced it has about US\$3.2 million in EmPOWERing Clean Energy Communities grant funds available to non-profit organizations, community groups and local governments that serve Maryland's low-to-moderate income households.

The EmPOWERing Clean Energy Communities grants will be competitively awarded to energy-efficiency projects that generate significant energy savings, with the financial benefits of the energy savings being passed on to Maryland's low-to-moderate income residents.

To ensure an equitable distribution of grant funds statewide, each Maryland county (or county equivalent) has been assigned an allocation of grant funds based on the

number of low-to-moderate income households residing in the respective county or county equivalent.

Under the EmPOWER Maryland initiative, the State of Maryland will reduce energy consumption by 15% by the year 2015. To help achieve this goal, the MEA encourages residents to adopt the combination of energy savings measures that are most appropriate for their home. In many cases, these measures do not require a large financial investment.

MEA will post the grant application for the EmPOWERing Clean Energy Communities program on the MEA Website [here](#). Grant applications will be due back to MEA by Jan. 11.

Margins & Economics

Oil Prices Fall as Crude Oil Inventories Rise

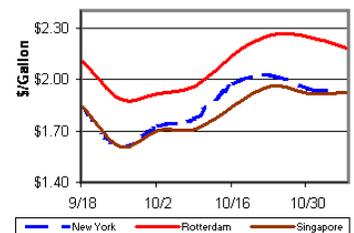
Prices fell on the NYMEX West Texas Intermediate December futures Nov. 12 to US\$76.35 a barrel (/bbl), down \$2.41/bbl from the day before. Brent crude prices also fell, settling at \$77.95/bbl, and NYMEX ultra-low sulfur diesel followed suit, closing at \$1.98 per gallon (/gal).

Data confirmed by the Energy U.S. Energy Information Agency (EIA) indicated domestic crude and refined product inventories rose last week, revealing lack of demand among U.S. consumers.

As reported in *Reuters*, industry observers noted the EIA data also showed poor refinery demand for oil. Reporting from Clare Rangel of *Dow Jones Newswires* indicated that, "the inability of U.S. oil consumption to revive amid the current stock glut has been one of the factors curbing recent attempts by the oil market to sustain a move above \$80/bbl."

The ethanol markets also saw their share of losses. On the spot market, losses were mostly in the range of pennies, with Houston falling half a cent; Los Angeles, New York and Seattle all falling 1¢; and Doraville, Ga., falling 1.3¢. Meanwhile, Argo, Ill., saw a larger loss of 3¢ and Baltimore remained at yesterday's price.

International Spot Gasoline Prices



On the rack market, prices slipped a bit as well: Minneapolis fell 0.7¢; Milwaukee and Lincoln, Neb., both fell 1.2¢; and Bettendorf, Iowa, and Kansas City, both fell 1.4¢. On the other side of things, Fargo, N.D., gained 0.3¢ and Pekin, Ill., rose 1.4¢.

Corn futures fell on CBOT as well, by 3.6¢, bringing the price to \$3.904/bushel, and ethanol futures fell as well, by 0.6¢, to reach \$1.969/gal.

[Louise Poirier and Theresa Ward](#)

Bangchak Petroleum Forecasts Lower 2010 Earnings after a Profitable 2009

Thai refiner Bangchak Petroleum (BCP) forecasts lower 2010 earnings in its Nov. 12 press announcement concerning its third quarter earnings and future outlook. The report also stated that between 6- and 7.5 billion baht (US\$180- and \$226 million) would be invested during the next two years to boost efficiency and invest in ethanol.

A drop in refining margins expected in 2010 would push earnings before interest, tax, depreciation and amortization (EBITDA) below the roughly 8 billion baht (US\$240 million) targeted this year, President Anusorn Sangnimnuan stated in the announcement.

“The reason we expect lower EBITDA is largely because we see refining margins falling to US\$4 to \$5 per barrel [bbl],” Anusorn said in the release.

Its EBITDA for the first nine months of 2009 stood at 6.6 billion baht (US\$180 million), and its refining margin, excluding the impact from oil inventories, was above \$8/bbl, compared with the industry’s \$4/bbl to \$5/bbl, Anusorn said.

BCP is majority-owned by the Thai Finance Ministry and state-controlled energy giant PTT. Anusorn said Bangchak was on track for record profits this year, fuelled by high gross refining margins from output at a new unit and oil hedging.

The company made a net profit in the third quarter of 2.15 billion baht (US\$64.5 million) against a loss of 252 million baht (US\$7.5 million) a year earlier.

Refining capacity in 2010 was expected to be 90,000 barrels per day (b/d), up from an average 80,000 b/d this year on the back of the economic recovery, Anusorn said.

BCP, which plans no major plant shutdown in 2010, will finalize partnership plans for its 2 billion baht (US\$60 million) ethanol business by the end of this year or early 2010, Anusorn said, expecting a 10% rate of interest.

The company would also increase the number of its gas stations to between 250 and 260 next year from this year’s expected 130.

Fuels & Processing

UK to Reduce Conventional Fuel Use Through Additional Nuclear Plants

In an effort to reduce carbon emission through the decreased use of conventional energy sources such as petroleum, the United Kingdom announced plans to build 10 new nuclear power plants.

The new plants are expected to produce 25% of the U.K.’s energy needs by 2025 and may be completed as early 2018. The locations for the plants include sites on or adjacent to existing nuclear power plants, aside from two new sites that were nominated: Braystones and Kirksanton in Cumbria, England.

Ed Miliband, the British Energy and Climate Secretary, told reporters that nuclear energy had an important place in reducing greenhouse gas emissions due to its standing as a “proven, reliable source of low carbon energy.”

The British government’s Nuclear National Policy Statement approved 10 out of 11 sites that were proposed by the nuclear industry with the most controversial being in

Kirksanton where a wind farm will be replaced by the new plant. A site at Dungeness was rejected by the government.

An attempt to increase the use of nuclear power is already drawing the ire of various environmental groups in the United Kingdom, including Greenpeace’s Ben Aycliffe, who told *The Guardian*: “You can’t justify building more nuclear power stations when there is no solution to radioactive waste and when international regulators are saying there are huge uncertainties surrounding the safety of designs.”

Miliband said that the government was also focused on increasing the use of renewables and clean fossil fuels to reduce carbon emissions, calling them the “trinity of low carbon fuels.” The government recommendations will go out to consultation until February 2010.

[Frank Nieto](#)

South African-based Sasol is Considering Lake Charles Chemical Complex for New Octene Unit

Sasol announced Nov. 12 that it has begun basic engineering for the first commercial installation of its proprietary Tetramerization technology.

Jacobs Engineering in Houston was recently awarded the basic engineering contract, which is expected to be complete by the third quarter of 2010.

Tetramerization, the process of reacting four ethylene molecules to produce one octene molecule, was developed in Sasol's research and development laboratories in South Africa.

The initial commercial unit will have a combined capacity for 1-octene and 1-hexene of 100,000 tons per year. Various locations for this first unit are still under consideration, with Sasol's Chemical Complex, near Lake Charles, La., being a leading candidate. Construction is intended to begin in 2011 with initial production slated for 2013.

With a capacity of 196,000 tons per year, Sasol is the world's largest producer of 1-octene. The additional planned capacity in North America is expected to help meet the increasing demand for this product.

Octene is used primarily as a comonomer in the production of high performance linear low-density polyethylene resins, where it imparts a host of specific characteristics such as strength, thinness, elasticity and puncture resistance in products ranging from dense and durable plastic for wire coatings, automotive interiors, raincoats and strong garbage bags to low-density, high-quality shopping bags, cling-wrap film and myriad related consumer plastics. Octene is also utilized in the production of elastomers, acids and alcohols.

[Rene Gonzalez](#)

Carbon Energy Touts 1st UCG Power Station in Australia

Carbon Energy's chief executive officer Nov. 12 said his company will have Australia's first power station running on underground coal gasification (UCG) syngas in December.

"In July [2009], we commenced the construction of our 5-megaWatt (MW) power plant, which we aim to have up and operational prior to the end of December, with electricity following into the local grid by January next year," said Carbon Energy Chief Executive Andrew Dash.

"The power station, when commissioned, will be fuelled by gas produced from our UCG panel constructed last year and it's important to recognize that this will be the first power facility of its type in Australia."

In the meantime, "we are already well progressed with our Phase 2 project, an additional 20-MW to 25-MW power plant, which will incorporate carbon capture and storage technology. Front-end engineering and design is now under way with the initial report due in December.

The phase-one plant will employ four GEC Alsthom Ruston spark-ignition generator-set engines, capable of generating 1.73 MW, he said.

"To facilitate the carbon storage, Carbon Energy signed an agreement in July 2009 with Queensland company ZeroGen. Planning for this project is expected to be finalized by the end of 2009, with electricity generation likely to commence in the first half of 2011," Dash said.

On a related front, "we continue to work toward the development of a 150-MW to 300-MW UCG plant and the establishment of Blue Gum Energy Park. The vision is for the Blue Gum facility to utilize syngas from UCG at Bloodwood Creek to produce low-cost, low-emissions electricity, ammonia, synthetic natural gas and chemical processing facilities," he said.

[Jack Peckham](#)

ASTM Balloting Cetane Test for B5 Biodiesel Blend

ASTM members this month are balloting a proposed revision to the D975 diesel standard to recognize the use of the D4737 cetane test method for B5 (5% biodiesel) blends.

The ballot would allow D4737 when D613 method isn't available, even though biodiesel blends currently are

excluded from the scope of D4737. Rationale: D4737, according to the ballot, has been shown to under-predict cetane number of B5 blends.

[Jack Peckham](#)

KLM to Make Demonstration Passenger Flight on Biofuel

KLM Royal Dutch Airlines officials announced Nov. 4 that they will make a demonstration flight on bio-kerosene with a select group of passengers. This will also be the first flight in Europe on bio-kerosene, a company press release stated.

On Nov. 23, KLM will operate a flight using Boeing 747 equipment, and one of the aircraft engines will be running on a fuel mixture made up of 50% biofuel and 50% traditional kerosene.

Louise Poirier

Transportation & Logistics

DOT Funds More than 10,000 Transportation Projects

The U.S. White House announced Nov. 12 that the U.S. Dept. of Transportation (DOT) has authorized more than 10,000 transportation projects across the United States through American Recovery and Reinvestment Act of 2009 (ARRA) dollars. According to the news release, state agencies reported 10,041 projects have been approved, including major initiatives in Florida, Kentucky, North Carolina and Pennsylvania.

To date, the DOT has made US\$48.1 billion available for highway, road, transit, bridge and airport construction and repairs nationwide. Of that, \$30.6 billion already has been obligated to fund 10,041 approved projects in 53 U.S. states and territories, with 6,547 transportation projects under way.

DOT agencies have been doing their part to make Recovery Act funds available to states as quickly as possible

for local shovel-ready transportation projects. The Federal Aviation Administration has awarded 99% of its funding, \$1.2 billion, for 355 airport improvement projects; the Federal Highway Administration has approved \$20.2 billion for more than 8,500 road, bridge and highway projects; the Federal Transit Administration has awarded \$7.4 billion to state and local transit agencies for new vehicles, facility renovations and maintenance; the Federal Railway Administration has approved 93% of funding available under the Amtrak Capital Grants program; and the Maritime Administration has spent 96 million, or 100% of its ARRA program funds, for capital improvements to small shipyards.

This winter, the DOT will also announce \$8 billion in grants to launch high-speed rail in America, and another \$1.5 billion in TIGER Discretionary Grants.

Theresa Ward

Ghosn Urges Government Support for Zero-Emission Vehicles

According to a report filed by *Agence France Presse* (AFP) Nov. 12, Nissan and Renault Chief Executive Officer Carlos Ghosn told an audience at the China Europe International Business School auto forum in Shanghai that electric cars could help China and other countries reduce their dependency on oil, but he said it was important for their governments to provide incentives to make the transition. He noted that U.S., French and Japanese governments have already offered about US\$7,500 to consumers who purchased zero-emission cars.

Ghosn said during the event that governments need to be involved and participate as car manufacturers respond to the growing awareness among consumers that zero-emission vehicles are necessary to cope with the environmental crisis.

“With electric power, countries would no longer have to rely on one single commodity – crude oil – to supply all their transportation needs,” Ghosn said in the AFP article.

Ghosn told participants that all major car makers were investing in hybrid, clean diesel, electric cars, indicating that not one manufacturer felt “they could stay on the sidelines.”

According to the AFP report, Ghosn said that Japan’s Nissan Motor and its partner Renault SA of France plan to release their Leaf electric car, which runs on a reusable lithium-ion battery, in the United States and Japan next year and globally in 2012.

Ghosn added that the alliance was in talks with officials in the central Chinese city of Wuhan and the southern province of Guangdong for pilot projects involving the Leaf. He said the Chinese government is aware that consumers will need incentives to drive demand for electric cars.

Chen Qingtai, a researcher for China’s State Council Development Research Center, said in the AFP article that electric car development should be a priority for China, which was last year the world’s second-largest importer of oil. “The cheap oil era has come to an end,” Chen said.

“For the electric car industry it’s opposite, currently we don’t have economies of scale,” Chen said. “If we increase the size of production, then the cost per unit will drop tremendously.” Chen said Beijing should present a comprehensive package of incentives to promote the electric car industry.

Incentives noted could include rebates, requiring government agencies to buy more electric cars, tougher

compulsory fuel efficiency standards and carbon dioxide consumption taxes.

Ford Sales Boom in Europe

Ford, the only U.S.-based automaker showing a profit this year, boosted European sales 12.8% year-over-year last month, according to a report from the *Detroit News*.

“This is the strongest October we’ve had in Europe for 12 years, and it shows we must be doing the right thing in the eyes of our customers,” Ford-Europe Vice President Ingvar Sviggum was quoted as saying.

This year, Ford’s European market-share stands at 9.1%, with more than 1.2 million vehicles sold.

However, Sviggum warned that “the future remains uncertain” for all automakers in Europe as scrappage programs run out of cash.

“Our current forecast [for 2010] is for an industry between 13 [million] and 14.5 million units. That’s down roughly 2 million vehicles vs. this year,” Sviggum said. “Given the ongoing weakness in the European market, further actions are needed at both the national and EU [European Union] level to help bolster consumer confidence and demand.”

Jack Peckham

VW Beats Toyota as World’s Biggest Automaker

Volkswagen vehicle sales this year are out-running the formerly No. 1 car seller, Toyota, as noted in a report from *The Guardian* (UK) this week.

Crucial to the change: government-backed stimulus packages aiding car sales, according to the report.

VW “has produced 4.4 million vehicles so far this year, outstripping its Japanese rival which has seen 4 million cars roll off production lines since January,” according to the report.

“Estimates by IHS Global Insight reflect the benefit on the German manufacturer of government measures in China, Germany and Britain to prop up their automotive industries and stimulate consumer demand in the wake of the worldwide economic downturn.

“The group has launched a range of VW models tailored for the Chinese market and sold 128,000 cars there in July, accounting for nearly a quarter of its global sales for that month as it moves aggressively into the world’s largest car market.

“However, IHS Global Insight said Volkswagen’s ascent to the top of the manufacturing league was aided by Toyota’s decision to halve its output in the first quarter of the year.”

Toyota has the capacity to make 10 million vehicles a year “but it expects to make 7 million vehicles in 2009, compared with an output of 9.24 million last year,” according to the report.

Jack Peckham

Low-Carbon Cars in Europe Face Challenges

AutomotiveWorld.com has published a new report examining the challenge for vehicle manufacturers to meet the low-carbon agenda in Europe. *Low-Carbon Cars: Strategic Implications for OEMs in Europe* analyzes the strategic implications of low-carbon cars in the European Union (EU) for vehicle manufacturers.

According to the report, the three-largest challenges include defining the right portfolio of technology packages to reach the low-carbon targets; securing the supply chain to deliver those technologies, with a special emphasis on the issue of the supply of lithium for batteries; and developing a green-branding strategy to present new technology packages to consumers.

Also addressed is the feasibility of meeting the EU

| Technology Package | 130/gal/km share | 95gal/km share |
|--|------------------|----------------|
| Eco-variants @ 100 gal/km | 25% | 25% |
| Eco-variants with stop-start @ 95 gal/km | 10% | 25% |
| Petrol hybrid @ 80 gal/km | 5% | 15% |
| Diesel hybrid @ 75 gal/km | 0% | 5% |
| Plug-in hybrid @ 50 gal/km | 5% | 10% |
| Full battery electric @ 40 gal/km | 0% | 5% |
| Average unchanged vehicle @ 160 gal/km | 55% | 15% |

Technology package shares to meet 130 gal/km and 95 gal/km
Source: AutomotiveNews.com

targets of 130 gallons per kilometers (gal/km) by 2015 and 95 gal/km by 2020 due to the growing social and political momentum behind the low-carbon concept amid increased concerns about the pace and impact of climate change.

Enhanced awareness among non-governmental organizations and governments about the low-carbon agenda is reaching all aspects of society, and consumers will be looking for “better-than-compliance” cars in the future, the report said.

The technology packages required for low-carbon cars offer differing levels of performance improvement against cost, but the analysis shows that by 2020 the achievement of the 95 g/km target will have necessitated a massive shift toward hybrid and full-electric vehicles. The

data below, taken from the report, illustrates the approximate scale of change required in a typical average portfolio mix.

The report points out that this shift will have a huge impact throughout the automotive industry value chain, from material supply all the way to dealerships. Further, it is likely to result in innovative business models and new relationships rather than operating business as usual while selling low-carbon cars. As the report makes clear, different original equipment manufacturers are adopting different strategies to meet the low-carbon agenda: and not all of them will be right.

Theresa Ward



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