

EI NEW ENERGY™

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ANALYSIS

US Takes Swifter Course for Emissions Cuts

Strong low-carbon incentives in the newly signed US Inflation Reduction Act are expected to have a noticeable impact on greenhouse gas emissions, especially in electricity and transport. Much of the hype around the new law has revolved around the incentives included for carbon capture and hydrogen. Those have been emphasized as a major difference with Europe and China, where climate policies mostly focus on renewable electricity and electric vehicles (EV). But while carbon capture and hydrogen could indeed have a substantial impact post-2030, models show that in the current decade, US emissions reductions will follow the same pattern as in other global regions: They will mostly come from the power and transportation sectors where wind, solar and EVs will increasingly replace fossil fuels and internal combustion engines.

Models suggest the IRA would bring US emissions to around 4 billion tons/year of CO₂ equivalent by 2030, down from 6.6 billion tons in 2005, 5.5 billion tons in 2021 and around 5 billion tons without the bill. The US' emissions reduction target is a 50%-52% cut from 2005 — which would bring down emissions to 3.3 billion tons in 2030.

Power-ful Impact

Princeton University's Repeat Project found, for example, that power would account for 37% of IRA-induced emissions reductions to 2030 and transport for 28%. Industry would represent 13%, and everything else — including buildings, non-CO₂ gases such as methane and natural carbon sinks — 22%. This would continue and accelerate existing trends.

Power sector emissions, which used to represent the highest share of US greenhouse gases, dropped by an impressive 37% over 2005-21 as gas and renewables displaced coal. Gas now accounts for 38% of US generation, up from 19% in 2005, and wind and solar for 13%, up from under 1%. In the meantime, coal dropped from 50% to 22%. Princeton's modeling suggests that while power emissions would decrease by another 37% between now and 2030 in the base case, they could fall twice as fast — by 69% — with the IRA. That's largely because new wind and solar additions would reach a staggering 90 gigawatts per year, almost four times the record 25 gigawatts set in 2020. Carbon-free technologies as a share of total generation would rise from roughly 40% in 2021 to around 75% in 2030 due to the IRA, compared to 60% without it, according to another analysis from consultancy Rhodium Group.

The IRA would also incentivize deployment of carbon capture and storage (CCS) at new gas-fired power plants and retrofits of existing gas and coal plants. Princeton modeling suggests 90 million tons per year would be captured by 2030 at 18 GW of gas and 6 GW of coal capacity — in addition to 110 million tons/yr in non-power industries. This is significant compared to the current carbon capture industry's 40 million tons/yr globally, but small in regard to the US' installed power capacity, at 490 GW for gas and 210 GW for coal.

>> *continued on page 2*

RENEWABLE ENERGY BREAK-EVEN PRICES

Developing Asia	Coal	Gas
Market Price	4.62	60.00
Wind Onshore	2.29	2.61
Solar PV	1.06	0.00
Solar CSP	19.25	25.42
Mideast	Oil	Gas
Market Price	100.01	58.26
Wind Onshore	7.91	2.83
Solar PV	0.00	0.00
Solar CSP	61.65	14.56

Market prices Aug 23. Coal and Gas in \$/MMBtu, Oil in \$/bbl. Table indicates fuel price above which renewable energy is more profitable than new coal-, gas- or oil-fired power, without subsidies. Source: Energy Intelligence

CCS Impacts Later

CCS would really start to take off after 2030, experts believe. Total captured volumes could for example grow from 200 million tons/yr in 2030 to 450 million tons in 2035 “if sufficient investment in transport networks and storage basins can be deployed,” according to the Repeat Project. Rhodium similarly found that industrial CCS would reach 100 million tons/yr in 2030 — just an extra 25 million tons/yr from the base case’s 75 million tons — but almost 300 million tons/yr in 2035. Over 60% of those would come from the refining, cement and ethanol industries.

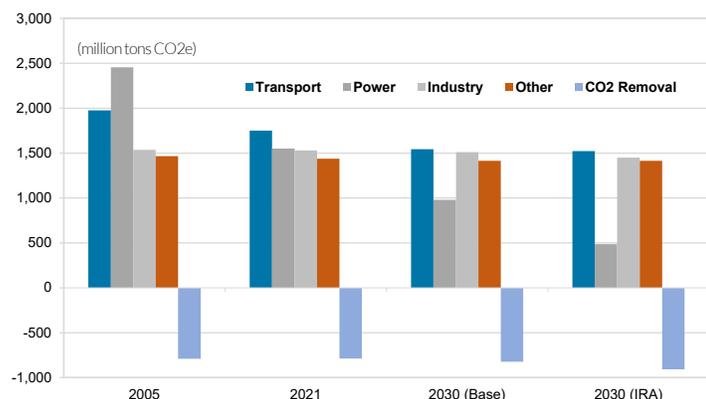
“The bill also provides an important level of foundational support for direct air capture (DAC) deployment, helping to scale a new and necessary clean energy technology,” Rhodium notes. DAC would represent 40 million tons/yr in 2035 or 14% of non-power

CCS, up from 6 million tons/yr in 2030. By contrast, blue hydrogen from natural gas with CCS would account for a mere 5%.

Rhodium also found that the new EV tax credit stipulations included in the IRA, notably on critical mineral and battery component sourcing, will limit its impact over the present decade. The consultancy nevertheless predicts that EVs will account for 32% of US light-duty vehicle sales in 2030, up from 22% without the IRA — and 6% now.

Philippe Roos, Strasbourg

US EMISSIONS TRENDS



Past and projected US greenhouse gas emissions by sector in million tons of CO2 equivalent per year. IRA = Inflation Reduction Act; this IRA scenario takes into consideration the climate provisions in this law including direct air capture (DAC) and carbon capture incentives. CO2 removal mostly includes forestry and other land use practices, plus a small amount of DAC. Source: Rhodium Group

US PATH TO PARIS COMPLIANCE

	Emissions (billion tons CO2e)	Difference With...		
		2005	2021	Base Case
————— Actual —————				
2005	6.6	--	--	--
2021	5.5	-18%	--	--
————— 2030 Base Case —————				
Rhodium	4.6	-30	-16%	--
Energy Innovation	5.1	-23	-6	--
Repeat	4.8	-28	-12	--
IEA	4.0	-40	-28	--
————— 2030 With IRA —————				
Rhodium	4.0	-40	-28	-14%
Energy Innovation	4.1	-38	-25	-20
Repeat	3.8	-43	-31	-21
————— 2030 Paris Compliant —————				
Repeat Net-Zero	3.3	-50	-40	-31
IEA Sustainable Development	2.8	-58%	-49%	-29%

Past and projected emissions under a choice of scenarios, in billion tons of CO2 equivalent. Source: Rhodium Group, Energy Innovation, Repeat Project, IEA

POWER

China: Transition Takes Hit From Heatwave

China — after dodging severe power crunches in the first half of this year — has now been forced to impose power rationing in Sichuan province in the midst of a prolonged heatwave that already ravaged many parts of Europe and other parts of Asia. Amid record-breaking temperatures and a drier-than-usual summer, the normally water-rich southwestern province is drying up. It saw hydroelectricity output plunge by as much as 50%, forcing a ramp-up in coal-fired power to make up for the shortfall. Sichuan has also resorted to power rationing targeting mostly industrial users since Aug. 15, with the duration being extended from an original six days to 11 days.

This poses a double whammy for China’s emissions reduction efforts: For one, energy-related carbon emissions are rising due to record coal consumption to cover for the hydro shortage. Secondly, momentum for green car adoption could slow — at least temporarily — as power rationing has halted or reduced operations at Sichuan factories producing electric vehicle (EV) batteries and related materials. In addition, existing EV drivers in the province have also been inconvenienced by operation disruptions at charging or battery-swapping stations. Those affected in Sichuan also include manufacturers of solar cells, semiconductors and LCD panels.

The Sichuan crisis may provide a useful illustration — or warning — for other regions around the globe. Power emergencies due to extreme weather are expected to keep increasing as global greenhouse gas emissions are nowhere near peaking. While many parts of China are battling heatwaves and droughts at the moment, other parts of the country are struggling with the other extreme — flash floods.

Emergency Power Cuts

Hydro typically accounts for 80% of Sichuan’s power generation capacity. But rainfall touched a historic low this month, causing hydro availability to plunge by up to 50%, according to local

media. Electricity demand, though, is spiking as record summer temperatures hike air conditioning usage. The province activated its most severe emergency measures, including power cuts to energy-intensive industrial users. Many were ordered to halt or reduce operations over Aug. 15-25. The move aims to cut industrial power loads by about 7 gigawatts (GW), which could then be diverted to households under Beijing's policy of prioritizing residential requirements.

EV Supply Chain Hit

According to local media, those affected include EV battery production plants belonging to the world's top EV battery producer CATL, but the company has to date not responded to such reports. Fujian-based CATL has six lithium battery production lines in Sichuan's Yibin city, the first of which entered operations in mid-2021. The company has also committed to expand its Yibin battery hub to 10 lines. At an even earlier point in the battery chain, lithium producer Shenzhen Chengxin's lithium salt production in Sichuan has also been temporarily suspended, said local news reports.

For EV drivers in Sichuan, the power rationing has disrupted many of Tesla's EV charging stations and local rival Nio's battery swapping stations. The EV battery and auto parts production disruptions in Sichuan are filtering downstream into the automobile assembly hub of Shanghai, where Tesla produces locally-made Models 3 and Y. Both Tesla and state-owned automaker Shanghai Automotive are reportedly facing auto parts shortages due to the Sichuan supply interruptions.

Solar Cells Affected

Sichuan's power cuts have also hit the operations of US-listed JinkoSolar, which ranks among the world's top 10 solar manufacturers. The Shanghai-based company announced Aug. 22 that two of its Sichuan subsidiaries have been ordered to minimize operations. "It remains uncertain how long the power rationing measures will persist and when JinkoSolar's Sichuan manufacturing facilities can resume full production," said Jinko, adding that it is "currently unable to evaluate the extent to which its business operation and financial performance for the full year 2022 will be affected."

Record Coal Usage

President Xi Jinping has pledged that the power blackouts that plagued China in the second half of 2021 "must not be allowed to recur." Beijing's immediate strategy is to ratchet up "high-quality" coal-fired electricity by speeding up approvals for coal projects able to meet more stringent emissions standards. China's near-term decision to resort to coal had initially drawn much criticism from environmentalists. However, in the wake of drastic cuts in Russian gas supplies, even European countries like Germany have introduced temporary measures that entail burning more coal. Chinese power plants are now burning a record amount of coal: Average daily coal usage for power generation surged by 15%

year on year to 8.16 million tons during the first two weeks of August, said top economic planner the National Development and Reform Commission in an Aug. 15 briefing. "Thermal coal usage hit a new historical high on Aug. 3 at 8.49 million tons," it added. This is threatening to jeopardize China's Paris pledge of peaking carbon emissions by 2030. Much hinges on how quickly China can construct and complete giant solar and wind farms as well as commission new nuclear reactors to substitute for coal in the medium- to long-term.

Kim Feng Wong, Singapore

TRANSPORTATION

US Electric Cars Get Jumpstarts — and Roadblocks

US electric vehicle (EV) uptake is poised to accelerate due to new incentives within the Inflation Reduction Act, but strings are attached. Federal EV tax credits of \$7,500 have been available to EV buyers for many years, but the IRA clears away several big obstacles that had limited how far — and how quickly — the credits could be applied.

The catch: the law also includes many restrictions on eligibility for the credits based on where the vehicle and battery are manufactured and where the critical minerals originate. This could limit the allure of the credit and its impact on EV sales, at least in the short term. In the long run, experts expect the measures to expand and nurture the already-growing EV manufacturing base on US soil and, ultimately, crank out more vehicles to send to US showrooms.

Common Man Wins

The EV tax credits, starting in 2023, will be available as an instant rebate of sorts. EV buyers no longer need to wait until the next annual tax return season to be refunded the value of the credit — they can instantly use it at the point of purchase. This is significant for consumers who simply cannot afford to "front" the price differential for an EV versus cheaper oil-powered cars, especially with inflation putting a dent in consumer pocketbooks.

"It's the common man we're trying to promote this for," says Kevin Riddell, senior manager at LMC Automotive near Detroit. Additionally, wealthy car buyers can no longer qualify for the EV tax credits, given new stipulations in the law on income level, although experts don't expect this to affect sales much. The new law includes first-ever eligibility caps based on annual income — \$150,000 for singles and \$300,000 for couples. Also, some pricier EVs wouldn't qualify for credits: electric sedans costing more than \$55,000 and electric pick-up trucks, SUVs or vans priced above \$80,000.

Dreaded Cap Gone

Another big win for EV uptake is the removal, starting in January, of a long-standing cap stating that only 200,000 EV tax credits can be claimed by consumers for each manufacturer’s lineup. General Motors and Tesla had already sold enough EVs to disqualify their customers from receiving the credits, and likely to follow suit were Toyota, Ford and Nissan. Many had criticized this cap as counterproductive by dis-incentivizing EVs from manufacturers that were doing the best job attracting consumers to go electric. In January, this cap will vanish. “It relevels the playing field again,” Riddell tells Energy Intelligence. “Every manufacturer has the credits, as long as you build the cars here.”

America and Allies

As always, “with the rose of the policy comes the thorn,” says Katherine Stainken, a vice president at the Washington-based Electrification Coalition. Not all EVs will qualify for the full \$7,500 credit. Effective immediately as of the IRA’s signing on Aug. 16, only vehicles with “final assembly” taking place North America — the US, Canada or Mexico — are eligible. Final assembly refers to the assembly of the vehicle itself, not assembly of the components.

Then, things get even tougher. Starting in 2023, restrictions will kick in requiring that 50% of EV battery components must be manufactured or assembled in North America to qualify for the credits. If that threshold is met, half of the credit — \$3,250 — can be claimed. Another requirement starting in January: 40% of the critical minerals used in an eligible EV’s battery must be mined on US soil or from a country holding a free trade agreement with the US. If met, that would allow the other half of the credit to be claimed. The percentages rise each year. Recycled materials would be eligible.

Take lithium as an example. Australia and Chile are both top lithium producers and both hold trade agreements with the US, so batteries built with those materials will be in the clear in terms of credit eligibility. But cobalt from top producer Congo (Kinshasa) would be ineligible to count toward the percentage requirements since that country is not one of the selected US trade partners. Aside from encouraging more local mineral production, the stipulation may encourage research and development into next-generation battery chemistries that use less cobalt, Stainken tells Energy Intelligence.

Models from some of the most popular brands among US consumers could be greatly affected by the country-of-origin restrictions. These include vehicles from Japanese companies like Toyota and Subaru and automakers elsewhere in Asia or in Europe, because those companies often use imported materials for vehicles they sell in the US, experts tell Energy Intelligence. Naturally, models from US manufacturers like General Motors, Ford and Tesla would be least affected.

The US will slam the door on anything EV-related from China at a swifter pace and with a stronger hand. Starting in 2024, eligi-

US ELECTRIC VEHICLE PENETRATION

Month	EV Sales	% LDV Sales EVs
Jul '22	79,325	7.02%
Jun '22	74,211	6.59
May '22	73,608	6.66
Apr '22	71,496	5.83
Mar '22	72,899	5.85
Feb '22	59,554	5.66
Jan '22	53,465	5.39
Dec '21	57,065	4.78
Nov '21	46,511	4.64
Oct '21	55,007	5.26
Sep '21	43,959	4.37
Aug '21	43,721	4.01
Jul '21	52,114	4.04
Jun '21	49,621	3.83
May '21	53,779	3.41
Apr '21	45,105	2.98
Mar '21	46,057	2.90
Feb '21	29,167	2.47
Jan '21	30,913	2.82%

EVs = plug-in hybrids and full battery-electrics.
LDVs = light-duty vehicles. Source: Wards Auto, US Argonne National Laboratory

ble EVs must have no battery components at all made or assembled by “foreign entities of concern” — which includes top battery producer China. In 2025, the law goes a step further by requiring that the critical minerals within an EV battery are not extracted, processed or recycled in China — the world leader in many types of mineral processing.

‘Tornado’ Lands

The country-of-origin stipulations will be tough to meet. Lead times for transferring manufacturing plants and building mines would take several more years than the restrictions require. Yet the IRA, as well as the earlier

US Bipartisan Infrastructure Law, does include incentives to help fund the movement of activities to US soil. “It’s not that the industry was left hanging,” explains Stainken. “Other provisions in the law should help to spur bringing the manufacturing back domestically and help build out processing plants.”

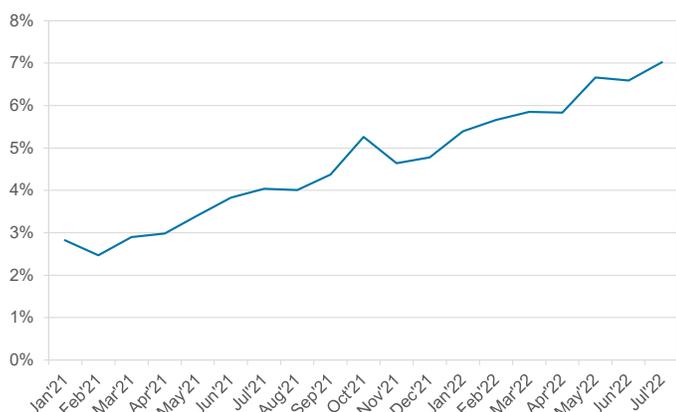
Another obstacle: dealerships and consumers are likely to have a tough time determining which vehicles are eligible for the credit — although the Department of Energy has already published a list of vehicles currently eligible under the immediate “final assembly” requirement.

The IRA, in many ways, lands a “tornado” in the middle of the wider vehicle and battery industries, Riddell says. “The IRA really brought in a whole lot of variability and uncertainty. There will be a lot of growing pains.”

Rising Uptake

So, given the mixed implications, what is the overall impact? Experts anticipate that the new provisions will attract more US EV purchases on the whole. Despite the new restrictions, consultancy Rhodium Group predicts that EVs will account for 32% of US light-duty vehicle sales in 2030, up from 22% without the IRA — and around 6% now (see graphs). In the long run, the IRA provisions are expected to lay a stronger foundation for the US EV market by influencing both consumer and automaker decision-making. The country-of-origin requirements are “definitely going to change some plans for certain manufacturers who are perhaps going to eventually localize production to North America, or recentralize it, and now at an accelerated rate,” Mike Fiske, an associate director at S&P’s Global Mobility

US ELECTRIC VEHICLE PENETRATION MOUNTS



US electric vehicle sales as a percentage of overall light-duty vehicle sales, by month.
Source: Wards Auto and US Argonne National Laboratory

division, tells Energy Intelligence. He sees the wisdom in acting sooner rather than later to avoid politically controversial foreign dependence, as seen in the oil markets for generations. “As much as we can do now to localize and secure those supply chains, that’s going to bring a lot more security from a national defense standpoint.”

Lauren Craft, Washington

STRATEGY

Mideast Gulf NOCs
Striking Tricky Balance

Mideast Gulf national oil companies (NOCs) have always played a delicate balancing act as they approach the energy transition — and it’s even more delicate these days. They are keeping one eye toward decarbonizing and the other eye on maintaining — perhaps even increasing — fossil fuel production to meet sustained, buoyant demand for hydrocarbons. The energy crisis and mounting geopolitical concerns are adding new layers as Gulf producers walk this tightrope.

Gulf producers continue to argue that global demand for oil — and gas — won’t go away for decades as transition efforts will require more time. Sultan al-Jaber, the CEO of Abu Dhabi National Oil Co. (Adnoc) and the UAE’s special climate envoy, last week stressed that global leaders need “a realistic new strategy that is practical, pro-growth and pro-climate” in their planning for the energy transition — or risk a damaging supply crunch. The world is already facing an energy crisis, with oil and gas prices at historical highs and questions around energy security looming large as a result of the Russia-Ukraine crisis.

The geopolitical and market concerns are prompting producers such as the UAE and Saudi Arabia to boost production capacity

to meet demand while speeding up the monetization of their hydrocarbon reserves. Indeed, with crude markets facing a supply crunch and the long-term health of Russia’s oil sector increasingly in doubt, Gulf states’ upstream investments could put them in an even stronger position as long-term suppliers — thanks to their low-cost, low-carbon production. This gives Gulf producers a competitive advantage over most rivals in the long term, even in a world in which demand is increasingly constrained by the energy transition.

Prioritizing Decarbonization

For Middle East NOCs, their cost position and Scope 1 and 2 carbon intensity are both “among the most favorable in the world, meaning they are in the best position to stay in business,” Boston Consulting Group (BCG) argues in a recent report. The report outlines three ways NOCs can generally change their operating models to start their transition journey: transform the way they operate by building cost and carbon considerations into their operations, streamline core processes and rationalize activities through simplifying core production, maintenance and safety processes and lastly pursue digitalization. The report also puts decarbonization at the center of NOC strategies.

Mideast NOCs, especially companies like Saudi Aramco and Adnoc, are a lot more advanced than many of their peers outside the region when it comes to decarbonization as they have a long-established history of low-carbon fossil fuel production. Meanwhile, their role as global energy suppliers remains crucial.

“The typical problems of methane emissions that they complain about in the West or in the US are a less frequent thing in the GCC region’s NOCs, especially in Saudi Arabia,” industry expert Sadad al-Husseini tells Energy Intelligence. “The problem is not where you produce hydrocarbons, it’s where you consume them,” he adds, underlining that energy consumption and CO2 emissions come primarily from energy-poor countries.

In al-Husseini’s view, if NOCs were to halt supply, it would drive consumers toward coal. “By sustaining oil production, the industry prevents a drift towards more damaging fossil fuels like coal and also protects the global economy from a recession driven by high cost and low supplies,” he says, adding that this is a global economic challenge, not just a climate challenge. Unlike international oil companies (IOCs), NOCs also sit on massive fossil fuel reserves, which means it is in their interest to find cleaner applications for fossil fuels. By contrast, IOCs in the long term are more likely to shift away from hydrocarbons and try to pursue alternative forms of energy.

Capacity Expansions And Clean Energies

Saudi Aramco made its own net-zero by 2050 pledge last year, making it the only NOC in the region to make such a commitment. But in its quarterly report published last week, Aramco

CEO Amin Nasser also called for more industry-wide investment in oil production capacity to safeguard global energy security and meet future demand as “hydrocarbons will continue to play an important role in the world’s energy mix for years to come.” He also stressed the company’s involvement in renewable energy production and in blue hydrogen. “Our approach is to invest in the reliable energy and petrochemicals that the world needs, while developing lower-carbon solutions that can contribute to the broader energy transition.”

Aramco recently published its sustainability report, outlining ways the company plans to achieve Scopes 1 and 2 greenhouse gas emission cuts across wholly owned operated assets by 2050. These include the capturing, utilizing and storing of 11 million metric tons of CO₂ equivalent annually by 2035, the generation of 12 gigawatts of solar and wind power by 2030, and reducing upstream carbon intensity by at least 15% by 2035. The company also aims to produce 11 million tons of blue ammonia annually by 2030.

Neighboring UAE has blazed the trail for the region’s energy transition in recent years. It was the first country to make a net-zero by 2050 pledge and is set to host the COP28 climate talks next year. Adnoc hasn’t set a net-zero goal but is proceeding with cleaning up its operations. As part of this, it is set to receive up to 100% of its grid power from the UAE’s nuclear and solar power sources in the future. The state giant is also collaborating with other players, such as Abu Dhabi clean energy firm Masdar on green hydrogen and with Japanese firms on blue hydrogen.

Yousra Samaha, Dubai

INTERVIEW

Hydrogen and CCS Poised for Investment Boom in US

Key energy transition technologies, like hydrogen and carbon capture and storage (CCS), look set for an investment boom in the US. This is thanks to the newly adopted Inflation Reduction Act (IRA), suggests Jillian Evanko, CEO and President of Chart Industries, in an interview with Energy Intelligence. The company has a unique perspective with a foot in both old and new energy — specializing in engineering, design and manufacturing of cryogenic processes and equipment that can be used for LNG projects as well as hydrogen and CCS.

The executive characterizes the IRA as a “meaningful milestone” for the US with a strategic focus on stimulating emerging technologies and new business activity. The bill’s incentive-based, investment-based policy construct “allows for an understanding of the way that the markets are made, whether that’s through the tax credit system or three stimulus funding.” This moves the commercial elements of decarbonization forward, she says.

Previously, Evanko notes, there was “a little bit of hesitation” on investments in particular on the carbon capture side in the US. That’s “because there was a disconnect, not necessarily in certain states, but across the board of how the tax credits in the system would work.” But now the IRA will move projects like carbon capture and hydrogen, “in a faster and I would say, more meaningful way than what would have happened without it,” she predicts.

Hydrogen Pragmatism

Looking more broadly at energy transition technologies in the US and elsewhere, Evanko notes how the conversation on blue hydrogen — which uses gas but with CCS — has also evolved. Back in 2020, when hydrogen started to come into vogue, “what we saw was a discussion and a focus simply on green” hydrogen generated by renewable electricity. However, within 12 months or so, Chart started to see more pragmatism “come into play” around blue hydrogen — “because you might be able to accomplish that in a faster way and more economical way,” Evanko noted. Potential “users and the industry started realizing that you’re not going to be able to go from A to Z in its entirety all at once and so maybe baby steps allow for us to feel like we can get there.” Chart’s hydrogen order book in 2021 was around \$282 million and was about half green and half other colors. Still, many policymakers want to move toward the greenest hydrogen possible. In the US, the IRA creates a first-ever production tax credit for hydrogen production — with eligibility likely to be strongest for green hydrogen, and blue hydrogen possibly eligible.

CCS Seeing ‘Real Orders’

CCS has been on a slightly different journey. Two years ago, Evanko was “super bullish” on the technology, and thought it was just a year behind hydrogen in terms of adoption. “Well, boy, was I wrong on that,” she admits, as CCS has “definitely has been slower in terms of uptake of larger-scale projects.” While there is a strong business case — and healthy demand for small-scale CCS installations in food and beverage sectors that use CO₂ in the making of their products — this has not been as clear-cut for large industrials that don’t have that same commercial pull, she says.

That, too, has started to change in the last six to nine months, with CCS “getting traction” with industrial users like cement manufacturers. “Now finally, we’re at the commercialization stage where we’re starting to see real orders around that,” Evanko says. And in the US, the IRA “is going to be a help for those that are trying — they want to do it, but they need some help to make the math work.”

LNG Opportunities

Gas will remain in the equation, too. In recent years, LNG export terminals or larger scale projects weren’t “even being discussed.” Now with the Russia/Ukraine conflict “and the desire for energy security access, resiliency, independence, LNG

is becoming much more active,” Evanko says. That’s not going to go away, Evanko suggests. Along the US Gulf Coast, LNG projects once considered unlikely to proceed are already moving toward final investment decisions, she says. Project operators that have existing facilities are exploring the option of expanding them and they’re also looking at bringing more capacity on line faster. “Pre-2022, I would have said maybe there’s an upcycle and then a pause and maybe another upcycle.” Chart is now “hearing and seeing” a “much more consistent order book” in the next seven to ten years in terms of LNG along the Gulf Coast, says Evanko.

Ronan Kavanagh, London

POLICY

Colombia’s New President Speeding Up Transition

Colombia’s new left-wing president took office earlier this month — and immediately reiterated his campaign vow to transition the country away from fossil fuels. Gustavo Petro reinforced his plans to deny the issuance of any new oil contracts and move instead toward renewable energy. “We must and can find a model that is economically, socially and environmentally sustainable,” he told a vast crowd in Colombia’s mountainous capital, Bogota. “We are willing to transition to an economy without coal and without oil.”

Going a step further, Petro went on to suggest that Colombia’s creditors should be willing to accept climate action from his government instead of cash, echoing a similar deal proposed by Argentine President Alberto Fernandez at the UN climate conference in Glasgow last November. “If the [International Monetary Fund] helps to exchange debt for concrete action against the climate crisis, we will have a new prosperous economy and a new life for humanity,” Petro said with a hopeful tone.

Petro’s moves come at a heady time for Colombia’s energy sector. State-controlled oil company Ecopetrol reported earlier this month that it has seen record net profits, having earned \$2.4 billion during the period as its total sales increased by 125% and oil prices climbed. The company also said it had logged record profits for the entire first half of the year, with its production rising 6.6% to 704,600 barrels of oil equivalent per day compared to the same period one year ago. According to Colombia’s Agencia Nacional de Hidrocarburos, proven reserves in 2021 were estimated at 83% and production at 73% of the highest levels reached in 2013, with more than 60% of the country’s oil production being exported.

New Faces

For the important post of Minister of Mines and Energy, Petro has appointed Irene Velez Torres, a professor who describes herself as

a “researcher-activist.” She is part of a cabinet that, in general, draws from a mixture of both technical experts and more ideological leftists to please his base. Colombia’s gas industry union, Naturgas, is making a strong case for gas’ role in the transition. Luz Stella Murga, president of Naturgas, has already met with Velez Torres and said gas “can be an accelerator of the national government’s priorities in terms of reducing poverty, food security, energy transition and the fight against climate change, and in the process of industrial acceleration proposed by President Petro.” The natural gas industry generates more than 100,000 direct and indirect jobs in Colombia, according to Naturgas.

On the new government’s first full day in office, Minister of Finance Jose Antonio Ocampo, a former UN official who previously held the same position in the government of Ernesto Samper in the 1990s, said the Petro administration would seek to add \$11.53 billion to its yearly budget. It would do so by adding higher taxes on both exports of coal and oil and on high-earning individual taxpayers.

Risks and Realities

Not everyone is sure of the government’s path forward, however. Speaking to local journalists, the president of the Colombian Association of Oil and Gas (ACP), Francisco Lloreda, warned that a decrease in investment in the oil industry and the cancellation of exploration and production projects would jeopardize “not only the competitiveness of fundamental projects for energy self-sufficiency and having reasonable prices for households, particularly in gas and electricity, but it would impact the development, employment and contracting of goods and services.” In an August report, the association predicted that if Petro’s policies were enacted, Colombia would be forced to start importing gas beginning in 2026 and oil beginning in 2028.

Some analysts have also warned that Petro’s moves may disproportionately impact Colombia’s poorest. Around 37.5% of Colombians live below the poverty line, according to The Economic Commission for Latin America and the Caribbean. “For both industry and consumers, losing gas self-sufficiency would come at a significant cost” since “50% of the gas consumed in Colombia is destined for industry and household use by families,” Jose Ignacio Lopez, director of economic research at think tank Corficolombiana, said in the daily *El Espectador*.

Also, some worry about the impact of the president’s policies on the country’s investment landscape. “The oil sector has been an important source of foreign direct investment,” Richard Francis, senior director of Latin American sovereign ratings for ratings agency Fitch, tells Energy Intelligence. “An area where you’re probably going to have some impact is on investment because private sector investment in the area is going to be wary coming in with the rhetoric that’s coming out of the government.”

Michael Deibert, Washington

IN BRIEF

BlackRock Bets on Batteries

BlackRock Real Assets has committed to invest A\$1 billion (\$690 million) through Australia’s Akaysha Energy for building up a portfolio of 1 GW of batteries across Australia, according to local media. BlackRock is acquiring Akaysha — a renewables and battery player — and the deal has been confirmed to proceed at an undisclosed figure. The Aussie firm has a pipeline of up to nine battery projects that would help accelerate the roll-out of a further 4 GW of renewable energy capacity across the country, the *Australian Financial Review* reports, citing comments by Akaysha Managing Director Nick Carter. BlackRock’s Asia-Pacific co-head of climate infrastructure, Charlie Reid, also notes the potential for Akaysha — with support from BlackRock — to invest in energy storage assets in Asian markets such as Taiwan and Japan.

ProPetro Adds E-Fracking

Oil-field services provider ProPetro is expanding its fleet of electric-powered hydraulic fracturing units again, this time by adding two electric fracking fleets through long-term lease agreements. Midland-based ProPetro said Monday that it ordered two electric fracking fleets from a “leading manufacturer,” with an option to purchase each fleet at the end of its respective lease term.

ProPetro’s move comes as demand for electric fracking booms, particularly in the Permian Basin, its core operating area. The use of more electricity-powered rigs and equipment in the oil field has emerged as a key part of many shale players’ plans to decarbonize their operations. The electric fleets also offer lower operating costs, particularly in the current high fuel price environment. ProFrac estimates that the monthly fuel and equipment costs for one of its new electric fracking fleets can be over 40% lower than a diesel-powered unit.

Acwa Uzbek Deals

Saudi Arabia’s Acwa Power has signed energy deals with Uzbekistan worth \$12

billion, mostly focused on cooperation in renewables, during Uzbek President Shavkat Mirziyoyev’s trip to Saudi Arabia last week. The deals include a heads of agreement to develop a 1.5 GW wind farm in Uzbekistan, a plan for investment in “green” hydrogen and a broad \$10 billion investment cooperation agreement. These would contribute to Uzbekistan’s long-term diversification strategy as it targets 8 GW of solar power and 12 GW of wind power capacity by 2026 and 2030, respectively, the Uzbek energy ministry said.

The agreed wind project would cost \$2.4 billion and is expected to reach financial closure at the end of 2023. It is envisioned to cover 19% of Uzbekistan’s overall renewable energy targets. Under the green hydrogen investment plan, Acwa Power will team up with US industrial gases company Air Products, the Uzbek ministry said.

QatarEnergy Solar Contract

QatarEnergy has awarded an engineering, procurement and construction contract (EPC) to build two mega-solar power plants that will generate 875 megawatts of renewable electricity, the company announced this week. Samsung C&T was awarded the EPC contract and was selected as the contractor of the project. The deal was signed with QatarEnergy Renewables Solutions, a wholly owned affiliate of QatarEnergy tasked with investing in renewable and sustainability projects and products in Qatar and abroad.

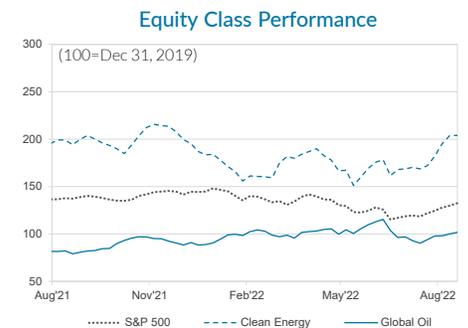
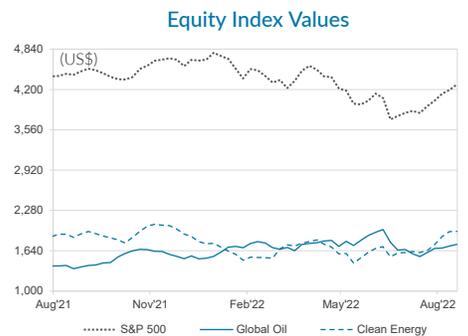
The EPC contract for Qatar’s industrial cities solar power project includes two large-scale photovoltaic solar power plants to be built in the Mesaieed and Ras Laffan industrial cities. Electricity production is expected to start by the end of 2024. Along with Qatar’s first solar project — the Al Kharsaa Solar PV power plant, which is still under construction — the country’s total renewable generation capacity is slated to reach 1.675 gigawatts by 2024. The mega-solar project falls in line with Qatar’s strategy to diversify its energy resources and increase its use of renewable energy, QatarEnergy CEO Saad Al-Kaabi

said during the signing ceremony. It reaffirms the company’s commitment toward delivering on QatarEnergy’s Sustainability Strategy and mid-term target of 5 GW solar-generated power by 2050, he added.

Rosneft Cuts Emissions

Rosneft reduced emissions last year, according to the oil major’s 2021 sustainability report released this week. Gas flaring increased, however, due to new field developments that lack utilization infrastructure. Specifically, the associated gas utilization rate fell to 72.4% from 74.8% in 2020. This means the company flared more gas. Under the company’s long-term development strategy adopted at the end of 2021, Rosneft aims to phase out gas routine flaring by 2030 and methane intensity would also need to decline by the end of the decade. Rosneft says its “green” investments amounted to some 55 billion rubles in 2021, which represents about 5% of its capex of 1.049 trillion rubles last year. The state-controlled major is sticking to a 2050 carbon-neutrality target.

CLEAN ENERGY EQUITY MARKETS



Source: S&P Global

EI NEW ENERGY DATA

ENERGY FUTURES: REFERENCE PRICES

	Aug 19	Aug 12	Chg.
Carbon (€/ton)			
ECX EUA	94.14	86.05	+8.10
CME GEO (\$/offset)	4.08	4.02	+0.05
Crude oil (\$/bbl)			
Nymex WTI	89.06	91.92	-2.86
ICE Brent	94.88	97.62	-2.74
Natural gas (\$/MMBtu)			
Nymex Henry Hub	9.17	8.25	+0.91
ICE UK NBP	52.56	46.09	+6.47
Coal (\$/ton)			
McCloskey CSX	195.00	192.40	+2.60
ICE Rotterdam	361.59	337.05	+24.54

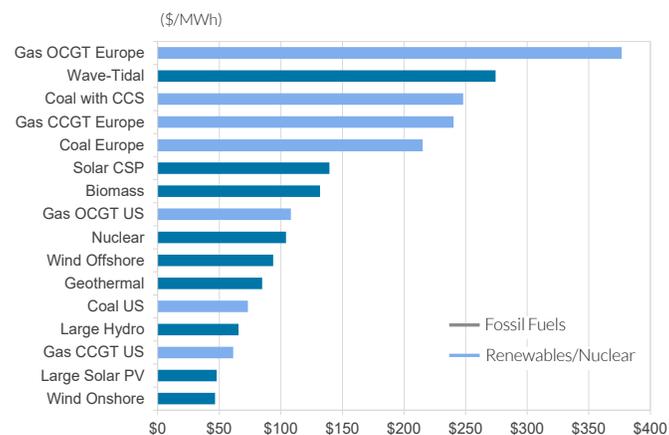
All prices are weekly averages and front-month. EUA = EU Allowances; GEO = Global Emissions Offset. Replaces ECX CER starting 3/30/21. ICE UK gas converted from p/therm. *Short tons. Source: Exchanges

GLOBAL ELECTRICITY PRICES

	Aug 19	Aug 12	Chg.
Europe (\$/MWh)			
Germany (EEX)	507.41	383.81	+123.60
France (Powernext)	512.07	383.57	+128.50
Scandinavia (Nordpool)	240.81	190.27	+50.54
UK (APX)	447.83	349.16	+98.68
Italy (GME)	515.36	467.55	+47.81
Spain (Omel)	150.35	152.95	-2.61
North America			
New England	88.05	117.28	-29.23
Texas (Ercot)	84.60	102.08	-17.48
US Mid-Atlantic (PJM West)	100.15	113.55	-13.40
US Southwest (Palo Verde)	121.55	130.05	-8.50
Canada (Ontario)	62.42	51.04	+11.39
Other			
Australia (NSW)	102.84	121.53	-18.69
Brazil (SE-CW)	13.47	17.81	-4.34
India (IEX)	58.11	46.48	+11.63
Japan (JPX)	162.17	200.36	-38.19
Singapore (USEP)	195.71	209.44	-13.73

Weekly average of wholesale prices. Source: Exchanges

NEWBUILD POWER GENERATION COSTS



Source: Energy Intelligence

DATA: The complete set of EI New Energy data is available to web subscribers, including historical and forecasted levelized cost of energy (LCOE) calculations, EV sales, our Green Utilities rankings, fuel switching thresholds, electricity production by sector, ethanol and biodiesel fundamentals, carbon and energy prices, along with methodologies and reader's guides. The New Energy Data Service can be accessed [here](#).

LATEST INDICATORS: SALES AND FLEET PENETRATION OF EVS

China		US	
NEV sales Jun '22	596,000	EV sales June '22	74,211
% LDV sales NEVs Jun '22	23.8%	% LDV sales NEVs June '22	6.59%
NEV sales Jan-Jun '22	2,600,000	EV sales May '22	73,608
% LDV sales NEVs Jan-Jun '22	22%	% LDV sales NEVs May '22	6.66%
Total NEV fleet as of Jun '22	10,010,000	Annual EV sales 2021	605,958
% fleet NEVs	2.5%	% LDV sales NEVs 2021	4.14%

Europe (EU, UK, and EFTA)

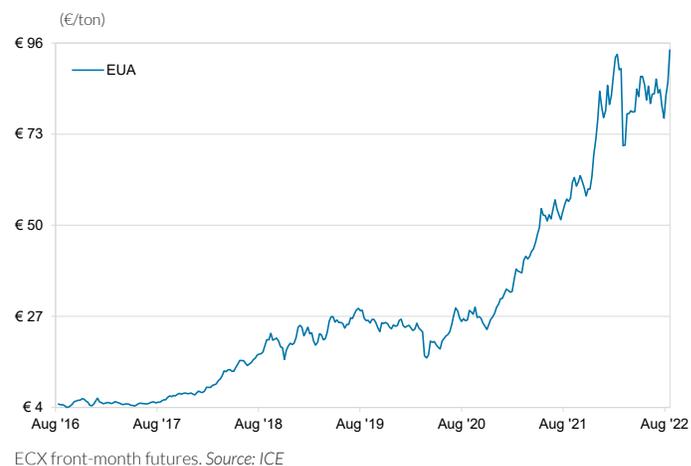
Sales Penetration		EVs = all New Energy Vehicles. EVs = plug-in hybrids and all-electrics. LDVs = light-duty vehicles. EFTA includes Norway, Switzerland, Iceland, Liechtenstein. Sources: China Association of Automobile Manufacturers, China Passenger Car Association, US Alliance for Automotive Innovation, US Argonne National Laboratory/Wards Auto, European Automobile Manufacturers Association	
EV registrations Q2 '22	560,266		
% LDV sales EVs Q2 '22	19.69%		
EV registrations Q1 '22	562,276		
% LDV sales EVs Q1 '22	20.47%		
EV registrations Q2 '21	574,626		
% LDV sales EVs Q2 '21	14.44%		

GLOBAL CARBON PRICES

	Aug 26	Aug 16	Chg.
Europe (€/ton)			
EUA Dec '22	89.29	92.08	-2.79
US (\$/ton)			
CCA (Calif.) Dec '22	3.50	31.11	-27.61
RGGI (Northeast) Dec '22*	13.71	13.65	+0.06
New Zealand (NZ\$/ton)			
NZU (spot)	85.60	83.45	+2.15
Asia (\$/ton)	Aug 22	Aug 15	Chg.
China (National)	8.47	8.57	-0.10
South Korea	20.62	20.76	-0.14

Benchmark months. *Short tons; all others metric tons. Source: ICE, OMF

EU CARBON FUTURES PRICES



ECX front-month futures. Source: ICE