

EI NEW ENERGY™

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STRATEGY

Automakers Weigh Separate EV, ICE Segments

French carmaker Renault is planning to sell the majority of its internal combustion engine (ICE) business to Chinese carmaker Geely, the owner of Volvo, and oil giant Saudi Aramco, according to press reports. This highlights a broader discussion within the auto industry between those wanting to let ICE activities slowly shrink and disappear, and those, such as Renault, which “do not want to wait,” says Philippe Houchois of asset manager Jefferies. It also mirrors similar debates among oil companies about whether to split up legacy hydrocarbon and new “green” businesses.

The Conventional Unit

The new engine and transmission entity, dubbed “Horse,” would be based outside of France and employ some 10,000 people. It would mostly focus on non-European markets where electrification is expected to be slower than in Europe, China and the US, and would include powertrain plants in Spain, Portugal, Romania, Latin America and possibly Turkey. Renault would only retain a minority stake of 40% in Horse, with Geely holding another 40% and Aramco the remaining 20%. The creation of Horse would echo that of Aurobay last year, which was similarly established by Volvo and Geely on a 50-50 basis to host the Swedish carmaker’s powertrain business, including the related research and development team and two engine plants in Sweden and China. Volvo intends to be fully electric by 2030 and to reach 50% of electric vehicle (EV) sales as soon as 2025.

Divesting from ICEs can be read as a move to unlock value as the rest of Renault, while still far from being a pure EV play, would be more clearly focused on electrification, says asset manager Stifel’s Pierre-Yves Quemener. “It’s very simple, if you look at the valuation multiples of companies such as Tesla, Lucid, Rivian or even China’s BYD Auto, it’s night and day with legacy automakers.” By contrast, Renault’s multiples are among the worst in the industry. Unlike legacy oil and gas activities, which many consider will be a cash cow for oil companies and thus a key financing source for their green diversification, designing and manufacturing conventional powertrains may prove increasingly challenging as the car industry transitions, Houchois believes. Volumes could shrink more rapidly than expected, which would erode economies of scale and increase costs.

The Electric Unit

In parallel with Horse, Renault is planning to create another unit specializing in EVs, called Ampere, comprising the full value chain from engineering and software to manufacturing. This division, which would also employ 10,000 people, would have “a business model adapted to the specificities of EVs and would be able to forge partnerships in new technologies and services,” the company said earlier this year. Renault is reported to consider the flotation of Ampere sometime next year, which would facilitate partnerships with new shareholders. The rest of the French carmaker, or 90,000 people with most of its vehicle assembly capacity, would transition from making ICE and hybrid cars — using powertrains from Horse — to full electrification.

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REGIONAL POWER GENERATION COSTS

(\$/MWh)	US	Europe	Japan	Dvlpg.	
				Asia	Mideast
Large Solar PV	37	70	117	37	32
Wind Onshore	41	54	83	47	61
Large Hydro	58	76	78	47	93
Gas CCGT	62	251	236	222	218
Geothermal	85	85	127	38	163
Wind Offshore	95	93	192	110	102
Coal	99	219	96	66	153
Nuclear	104	104	118	58	87
Gas OCGT	110	393	364	351	344
Solar CSP	116	176	NA	188	115
Biomass	132	132	132	108	125
Coal w/ CCS	178	252	195	137	266
Wave-Tidal	274	274	268	260	260

Levelized cost of energy, or cost of generating electricity over lifetime, including capital, operating, fuel and carbon costs. Dvlpg. Asia = developing Asia, mostly China and India. Source: Energy Intelligence

Oil Sector Parallels

Among oil companies, Repsol took a similar approach when it decided earlier this year to sell 25% of its renewable energy business to potential business partners, Credit Agricole Assurances and Energy Infrastructure Partners. Eni was similarly planning to float up to 30% of its new Plenitude retail and renewables unit in a move to tap green investment appetite while maintaining integration upsides and its majority holding. However, the initial public offering was postponed in June due to deteriorated market conditions, the Italian major said. Last year, activist shareholder Third Point sparked a comparable debate by calling on Shell to unlock value by splitting off its oil business for wind-down while launching a separate growth unit focused on LNG, renewables and marketing/trading.

Specialization vs. Spinoff

While electrification does not necessarily require a full spinoff, incumbent automakers should create specialized divisions to handle it as they need radical changes in the way they design, manufacture and sell cars, Houchois insists. “EVs involve more software, different materials, more recycling, and it’s better at first to isolate that from the rest of the company.” This is the key reason why Ford announced in March it would reorganize itself in two distinct businesses, Ford Blue and Ford Model e, respectively specializing in ICEs and EVs. While the two units will be “strategically interdependent” and remain part of the same company, they will increasingly differ in almost every aspect, from customers to development processes, supply chains and products, CEO Jim Farley told financial analysts.

THE WORLD’S BIGGEST CARMAKERS

Name	Country	Sales (\$ billion)	Capitalization (\$ billion)
Volkswagen	Germany	281	85
Toyota	Japan	264	200
Mercedes-Benz	Germany	154	58
Ford	US	148	61
BMW	Germany	135	48
GM	US	132	56
Honda	Japan	122	45
SAIC	China	113	26
Hyundai	S. Korea	103	29
Stellantis	France/Italy/US	101	41
Nissan	Japan	71	15
Tesla	US	67	841
Kia	S. Korea	61	24
Renault	France	52	8
BYD	China	38	102
Tata	India	36	20
Volvo	Sweden	31	18
Geely	China	16	19
Rivian	US	0.5	28
Lucid	US	0.2	25

Sales and market capitalization for select listed carmakers, in \$ billion. Sales are computed over the last trailing 12 months. Source: CompaniesMarketCap

Aramco’s Part

Aramco’s investment in Horse would be in line with the company’s claim that “one of the best ways to achieve meaningful emissions reduction in tomorrow’s automotive sector is to develop innovative fuel formulations and efficient internal combustion engine technologies today” — which, conveniently, would also protect one of the oil industry’s key markets. Aramco is exploring technologies such as diesel style compression ignition engines running on gasoline, opposed piston engines using two pistons per cylinder, and mobile carbon capture where some emissions are captured from the car’s exhaust.

Philippe Roos, Strasbourg

STRATEGY

Reliance’s Rapid Transformation Adds Export Vision

India’s Reliance Industries is becoming even bolder as it transforms its business model — with an eye on becoming an exporter of new energy gear. Billionaire Chairman Mukesh Ambani, who last year pledged 750 billion rupees (\$9 billion) for building four megafactories to make new energy equipment, last week told shareholders he was prepared to double the investment. Ambani sees the green energy value chain as the “new growth engine” which can outshine all its existing growth engines in just five to seven years. Of course, many obstacles would need to be overcome for his vision to become reality, including political risks and hurdles with harnessing and scaling the envisioned technologies. Reliance’s approach is unique compared with European oil majors and also more aggressive than that of the US oil majors. It envisions itself as a manufacturer of new energy gear — rather than just a producer of green energy, Morgan Stanley notes. In line with this, Reliance has been on an acquisition spree globally to gain access to technology in areas like solar cells and batteries.

Solar Sights to Battery Bets

Reliance would be the country’s top solar manufacturer if its vision succeeds. Ambani plans to double capacity at the company’s 10 gigawatt solar photovoltaic cell and module manufacturing factory in the western state of Gujarat, which would start production by 2024, then bring its capacity to 20 GW by 2026. That would mark massive growth for India, which currently has solar cell-making capacity of just 4 GW and module-making capacity of 18 GW, as per JMK Research and Analytics data. The production of battery packs at Jamnagar would start by 2023 and scale up to a fully integrated 5 GWh annual cell-to-pack manufacturing facility by 2024 and rapidly scale up to 50 gigawatt hours by 2027. Reliance, which has also been betting on hydrogen, now plans to start the transition from gray to green hydrogen by 2025.

Ambani, who owns 1.37 million barrels per day of refining capacity or 27% of India's total base, set the tone for transitioning his fossil fuel business to new energy last year. At that time, he unveiled plans to invest 750 billion rupees in three years to build four gigafactories to make photovoltaic panels, batteries, electrolyzers for green hydrogen and fuel-cell systems. In late August, Ambani added another gigafactory to the list that would make power electronics to help improve the efficiency of power devices.

Analysts see Reliance's new energy factories benefiting from Prime Minister Narendra Modi's goal of making India — the world's third-largest greenhouse gas emitter — carbon neutral by 2070. Gagan Sidhu, director of the New Delhi think tank the Center for Energy Finance, says India will need \$10 trillion in investment to reach its net-zero goal. That translates into investment of nearly \$200 billion every year, roughly equal to Reliance's market capitalization.

Reliance, which has an internal net-zero target for 2035, plans to position its new energy business as a net exporter of green energy. It also aims to make India a world leader in new energy manufacturing as a credible alternative to China, BofA Securities, a unit of Bank of America, says in a note. The International Energy Agency in a recent report notes that China's global share in all the various manufacturing stages of solar panels exceeds 80%. For key elements including polysilicon and wafers, that will rise to more than 95% in the coming years, posing supply-chain obstacles. "We expect silicon and hydrogen to emerge as the next decade's 'new oil' for Reliance, with potentially up to \$60 billion in value creation if things fall into place by 2025," analysts at Morgan Stanley said this week.

Rival Refiners

Reliance's rivals are also advancing their transition strategies. State-owned peer Indian Oil last month declared a net-zero target for Scope 1 and Scope 2 emissions by 2046. Smaller state refiners Bharat Petroleum and Hindustan Petroleum have set 2040 as their net-zero deadlines. But unlike Reliance, the state firms remain bullish on India's oil demand. Indian Oil, the country's largest refiner, told shareholders in late August that the company is in the process of investing \$12.5 billion that will help it expand refining capacity by 531,000 b/d to reach 2.15 million b/d by early 2025. India's oil product demand will keep rising at least up to 2040, Bharat Petroleum Chairman Arun Kumar Singh told shareholders at the end of August, assuring them about the safety of their assets. Singh believes high battery prices and range anxiety will keep customers hooked to the internal combustion engine for years to come.

Ambani, on the other hand, says his refineries will eventually produce only jet fuel and petrochemicals. That's because he sees electric mobility and alternate fuels corroding demand for diesel and gasoline. That bet can be risky. Morgan Stanley analysts note that technology shifts are a big risk for Reliance's new energy ventures. Reliance's five megafactories also face execution risks. Ambani's focus on newer fuels like hydrogen, which in the past

failed to live up to their hype, pose a potential threat to billions of dollars of investment.

Policy Pull

India's policy, too, remains unclear. In August, as a part of the formalization of its climate pledges, India raised its commitment for non-fossil fuels to account for half of its installed total power generation capacity compared with the 40% share it had pledged under the Paris climate agreement in 2015. It however dropped other targets, like a goal of 500 GW of non-fossil fuel based power generation capacity by 2030 and sourcing half of India's power generation from renewables. Still, the government has recently increased its policy support for new energy. The lower house of Parliament last month passed a bill to promote the use of alternative fuels like ethanol, green hydrogen and biomass, along with incentives for new energy investments and steps to develop a domestic carbon market.

Diverse Strategy

Reliance's multiportfolio approach will help it pivot quickly and lower downside risks, Morgan Stanley notes. The diversity of its portfolio is underscored by its bets in everything from batteries to investments in companies like Germany's Nexwafe for cheaper solar manufacturing, along with its formation of a New Energy Council with eight global experts to validate strategies.

Rakesh Sharma, New Delhi

INTERVIEW

Carbon Capture Advances on Both Sides of Atlantic

Carbon capture, utilization and storage (CCUS) has long been plugged as a critical part of the low carbon energy transition, but has often struggled to advance as other technologies like wind and solar have successfully scaled up. But that could be changing, with significant movement seen recently on both sides of the Atlantic, suggests Ruth Herbert, CEO of the UK's Carbon Capture and Storage Association (CCSA).

In an interview with Energy Intelligence, Herbert welcomed the milestone reached last week by Equinor, TotalEnergies and Shell's Northern Lights CCS project offshore Norway, with the signing of a first cross-border carbon capture and storage agreement. "I've always envisaged that the EU would make progress quite quickly on cross border, probably more quickly than any other region of the world because they have an awful lot of experience in creating frameworks across multiple countries," she noted. And while progress in Europe has probably come slower than some hoped, with the Northern Lights project and Rotterdam indus-

trial cluster moving to implementation, “there are now some networks emerging” that make it “one of the leading spaces for CCUS,” Herbert says.

Time Wasted

In the UK, CCUS progress has been “stop-start” with “time wasted” — but Herbert believes that the UK’s current net-zero strategy is a good one. That requires over 50 million tons of CO₂ to be captured and stored in the UK, by 2035. And at a fast start, with two clusters required to be operational by 2025. However that target is slipping, “and 2035 is very close,” she warns. Herbert points to a delay to the phase two shortlist, which should have been out in May and ended up being published over the summer. “We just need to be mindful of the fact that we’re meant to have another two clusters operational by 2030.” Looking further afield, Herbert pointed to recent news from the US of enhanced support for CCS in the Inflation Reduction Act: “What’s really interesting there is when something is done federally in the US, something’s done centrally, it can only really be a tax measure, because that’s really the only way to do something kind of all at once. And that can really, I think, drive volume,” she says.

Costs and Applications

The capital costs of CCUS have historically been seen as a barrier, but Herbert argues they are “actually not prohibitively expensive.” She pointed to UK government calculations for levelized costs of capture by new, next-generation capture technologies that range from £40–£60 (\$46–\$69) per ton “or even below that, and we’re seeing, depending on the application you’re capturing from.” Looking at storage costs, different studies suggest maybe £20–£30/ton in the 2030s, “so you’re not talking about prohibitive costs when you’re comparing CCUS with other options for decarbonization,” she says. While some suggest CCUS has probably missed the boat for power generation, Herbert believes it will still be needed to provide easily dispatchable low-carbon power to the grid. Like many others, however, Herbert sees strong potential in other sectors of the economy — particularly emissions from manufacturing. Even if you electrify parts of industrial processes “to create the heat, for example, or to create power,” there will still be parts of that process “which also release CO₂,” Herbert notes. “So if you’re thinking about how to go fully net zero, low carbon ... then you’re going to need CCUS as part of your process,” she adds, pointing to cement production as an example where “CCUS makes a lot of sense.”

Blue Hydrogen Prospects

Blue hydrogen — which combines natural gas-based steam methane reforming with CCUS to produce low-carbon hydrogen — is another promising avenue, with Herbert characterizing it as an “obvious” anchor fuel for the wider hydrogen market. “I definitely see blue hydrogen playing a leading role in the early stages” while laying “important groundwork for hydrogen overall.” Herbert sees blue hydrogen’s role as very much driving the development of the

hydrogen network in industrial clusters initially, creating “that economy scale, that scale of demand driving further demand.” This will help, she added, to “pump prime” the market, and then “hopefully, green hydrogen can also benefit from that and other sources of low-carbon hydrogen can actually build on that.”

Ronan Kavanagh, London

POWER

Baltic States Plan Offshore Wind Bonanza

Baltic Sea countries have vowed a sevenfold increase in their offshore wind capacity this decade as they seek out solutions to cut their consumption of Russian gas. The goal is to reach nearly 20 gigawatts of installed capacity in the eight-country region with Baltic Sea coastlines by 2030. In the region, only Germany and Denmark have commercial-scale operational offshore wind capacity, some 2.8 GW. The six other members — Poland, Finland, Sweden, Estonia, Latvia and Lithuania — have a pipeline of projects at the preconstruction phase. The offshore wind target is a big part of wider energy cooperation measures in the Marienborg Declaration signed by eight countries last week at the Baltic Sea Energy Security Summit, in a move to reduce reliance on Russia pipeline gas.

Oil Sector Interest

The region has good wind conditions. Indeed, oil majors such as BP, Shell and TotalEnergies have said they are interested in Polish offshore wind projects and are keeping an eye on the wider Baltic region. TotalEnergies told Energy Intelligence this week they remain interested in Polish offshore wind and are participating in tenders. A Shell spokesman tells Energy Intelligence that “Shell welcomes the intent of the Marienborg Declaration to deliver significant volumes of offshore wind generation.” Other European oil majors including Eni and Repsol declined to comment when contacted this week. Norway’s Equinor is a project partner in the underdeveloped Baltyk offshore wind projects in Polish waters.

Enormous Potential

Lobby group WindEurope says “the Baltic Sea has enormous potential for offshore wind” but stresses that lengthy permitting times are one of the biggest obstacles to achieving the targets. Denmark’s energy minister, Dan Jørgensen, said last month that permitting can take up to nine years in some circumstances. The declaration states “we will pursue faster permitting processes” and work to get rid of other bottlenecks that would threaten the target. Looking beyond the 2030 target of 19.6 GW installed capacity in the region, energy officials say the Baltic basin has a resource potential of up to 93 GW.

Germany and Denmark are the only countries with commercial-scale, operational offshore wind capacity in the Baltic Sea. Poland plans to have 6 GW operational by 2030 and 11 GW by 2040. Finland aims to have its first offshore wind farm operational by 2026–27, while Sweden has a sizable portfolio of 15 GW of projects at the pre-permitting stage. Estonia, Latvia and Lithuania have all stated they want operational offshore wind capacity by 2030. Last month, the Estonian government said it wanted to get 100% of electricity from renewable sources by 2030. Last April, the Lithuanian government said it would conduct an auction in the second half of 2023 for the country's first offshore wind farm with a proposed capacity of 700 megawatts, which could be operational in 2028. Latvia has yet to set 2030 targets but has a broad 15 GW goal for 2050.

Changing Winds

Bets on offshore wind have already been stacking up in the region. Enefit, the green subsidiary of Estonian energy firm Eesti Energia, said this past summer that it was starting a conceptual engineering design study for the planned 1 GW Gulf of Riga offshore wind farm. That project could be operational in 2028 and provide enough electricity to cover 50% of total Estonian electricity demand. And last month, the German and Danish governments announced a €9 billion (\$9 billion) project — known as the Bornholm Energy Hub — that would create a green energy hub on the island of Bornholm powered by 3 GW of offshore wind capacity. The green energy island would send power to both countries and could be operational by 2030.

Offshore wind is eyed keenly for expansion by EU member states as they shave reliance on Russian gas. European Commission President Ursula von der Leyen said last week “a wind of change is blowing across Europe.” Two gatherings, the North Sea and Baltic Sea Summits, have together seen pledges to build 85 GW in additional offshore wind capacity by 2030, she noted.

Jason Eden, London

DEMAND

Remote Work Here to Stay, So Does It Save Energy?

Telework or hybrid work is a trend that's sticking — and it appears to be saving energy overall but with a few wild cards thrown into the mix. Remote work is certainly keeping commuting traffic off the roads and cutting down on vehicle emissions, especially when considered alongside other trends such as increased vehicle electrification. Then come the side effects. These include extra vehicle trips often taken by remote employees out of eagerness to leave the home, along with increased heating or cooling costs in residences, experts tell Energy Intelligence.

Some say telecommuting is saving energy overall, despite the side effects. The energy implications have been measured in the EU by the International Energy Agency and the Europe-wide Clean Cities Campaign, which have come up with roughly similar conclusions. Teleworking for three days per week, in occupations where it's feasible, can save the bloc roughly 1%–2% of overall energy consumption or 2%–3% of energy consumption in the transportation sector specifically, says Jens Muller, a policy and urban expert at Clean Cities Campaign. The savings are compared to a situation with almost no teleworking, like before the pandemic, and apply to around one-third of jobs that are easily done from home. Of course, the energy savings “depend on how many people work from home or if they work from home every day or just a few days,” Muller says.

Telework is seen working together with other trends to curtail oil consumption in auto transport. The combined impact of remote working and the shift to electric vehicles (EVs) suggests gasoline demand in North America and gasoline-plus-diesel demand in Europe reached an all-time peak in 2019, estimates Dan Lippe, founder of Petral Consulting in Houston. That assumes sales of EVs will increase 15% to 30% per year for the next 5–10 years and that EVs remain popular with consumers.

Side Effects

Yet it's difficult to quantify the impacts of remote work. Vehicle miles traveled (VMT) statistics are typically a go-to source for following trends in personal car trips, but so many “overlapping factors” have been in play this year that it's hard to pinpoint any trends from this data, says Giovanni Circella, a transportation expert at the University of California at Davis. These include pent-up demand to take vacations as the pandemic eases off and the spike in fuel prices seen this past spring and summer. In the US, VMT in the late spring and early summer this year was slightly less than the same period in 2021, according to the Energy Information Administration.

“The jury is still out about the effects of remote work on transportation,” Circella says. Road congestion during the mornings and evenings of course lessens as a result of telework, but remote workers may take more local trips during the daytime to grocery stores, gyms, or schools to pick up children. In many cases, these trips involve personal vehicles rather than public transport. Some behavioral changes would need to take place to make clear reductions in VMT by remote workers, says Kate Lister, president of consultancy Global Workplace Analytics and a vocal advocate of telecommuting. “Things like trip chaining — instead of going out to the grocery store and school and the dry cleaner separately, do all those things together,” Lister says.

Here to Stay

What's clear is remote work is here to stay, at least to some degree, for the foreseeable future. Hybrid work seems to be the new norm: “Going into the office three days per week and stay-

ing home the other two days, or going into work two days and staying home for three days,” Circella says. The permanent trend will become clearer as more employers make decisions about their office spaces. During the last two years of the pandemic, only some office leases came up for renewal in the US, where office leases often span 10 years. “Knowing what businesses are going to do with excess office space is not going to play out until the next five to seven years,” Lister says. “I’m projecting that we’ll have 20% less office space by 2025.”

Offering telework is a way for employers to attract employees, especially with job shortages plaguing many fields. Political motivations are also strong, especially in Europe. “In the context of the war in Ukraine, it’s really important to save energy,” Muller says. In fact, the International Energy Agency recommended teleworking up to three days per week within a 10-point plan to curb oil consumption in Europe, published back in March.

Lauren Craft, Washington

POWER

China’s Ambitious Nuclear Vision Hits Slowdowns

Nuclear energy is a key driver of China’s decarbonization efforts, but its goals are facing slowdowns. Beijing deems nuclear a “non-fossil fuel” energy source alongside renewable sources such as wind, solar and hydropower. As hydro falters in times of extreme weather — as highlighted by the recent heatwave and droughts plaguing the Yangtze River region — the urgency to speed up nuclear development is mounting. Like many other countries that are struggling with power crunches — due to the Ukraine-Russian crisis, extreme weather or both — China wants to increase reliance on nuclear to boost its energy security.

In its key midterm energy plan rolled out last year, Beijing called for “proactive and orderly” development of nuclear power as part of its effort to peak carbon emissions by 2030. In addition, Beijing also wants to boost “indigenous” or self-developed nuclear technologies and equipment manufacturing capabilities that it can export. But despite an accelerated reactor approval process by Beijing recently, China’s nuclear progress is falling behind schedule. The country now looks set to fall short of its 2025 goal of 70 gigawatts of gross nuclear operating capacity. A closer look at the progress of currently under-construction reactors suggests even reaching 65 GW by the end of the current five-year plan (2021–25) will be an uphill climb, while achieving 70 GW appears impossible.

Behind Schedule

China’s installed nuclear generation capacity stood at just under 56 GW as of end-July. This means it needs to add 14 GW in order to

meet Beijing’s 2025 target. However, a count of those reactors scheduled for commercial operation by end-2025 would yield at best an additional 6.1 GW of capacity. The newbuild tally could possibly climb to 9.2 GW if two giant demonstration units — based on technology that originated from Westinghouse and was further developed by multiple Chinese engineering companies — could be completed by end-2025. All key parts and materials for the two reactors are domestically designed and manufactured, according to State Power Investment Corp. (SPIC), which has controlling ownership over the project. But progress of those two reactors is shrouded in secrecy and their completion schedule is far from certain.

China has been growing its nuclear fleet by around four to five units annually in recent years, says David Fishman, a senior manager with the Lantau Group energy consultancy. But it would need to accelerate the pace to seven or eight units per year if Beijing wants to increase reliance on nuclear as a means of meeting its 2060 carbon-neutral commitment, he notes. At the current pace of progress, the 70 GW target may take a year or two longer to be met, likely in 2026 or 2027, Fishman observes.

Indigenous Technology

The country’s two largest nuclear developers — China National Nuclear Corp. (CNNC) and China General Nuclear (CGN) — are both straining to meet their timetables for building new Hualong-One (HPR1000s) reactors. CGN, for example, has been struggling with delays across multiple newbuilds, which it blames partially on Covid-19-related issues. The company announced in January that due to “certain impacts” from Covid-19, it had adjusted its schedule for two reactors under construction in order “to achieve a high-quality start-up and safe, stable operations.”

Whether from Covid-19-related delays or technical issues, CGN’s construction time for new reactors has grown successively longer — starting from an impressive 57 months for a Guangdong unit that went commercial in 2019 and stretching to over 80 months for one in Liaoning province that just commenced operations earlier this year. Similarly, CNNC has taken an average 71 months to build its first four self-designed Hualong-One reactors, including twin reactors near Karachi in Pakistan. But the company says it is targeting shorter construction times of 50–63 months for two new units in Fujian province, which it wants to complete in 2024–25. This means it must significantly improve on its previous performance.

Export Ambitions

As in other low-carbon sectors like electric vehicles (EVs) and solar panels, China’s nuclear ambition does not stop at meeting domestic energy needs. Beijing wants to strengthen indigenous technological capabilities to target export markets. As stated in its energy technology innovation plan released earlier this year, the goal is to “scale up self-developed, third-generation nuclear technology for promotion in international markets.”

Kim Feng Wong, Singapore

IN BRIEF

China Emissions Plunge

China’s second-quarter CO2 emissions fell by a record 8% year on year, resulting in an absolute 230 million ton reduction that is the steepest in at least a decade, according to an analysis by the Centre for Research on Energy and Clean Air (CREA). The Q2 emissions plunge was driven by an ongoing real estate slump, strict Covid-19 control measures, weak power demand growth and strong advances in renewable energy, said CREA lead analyst Lauri Myllyvirta.

But while China’s coal-fired power generation declined by 4% year-on-year in the first half of 2022, it rebounded in July and August due to record-breaking heat-waves and droughts, Myllyvirta noted. However, the coal rebound “has not changed the more salient drivers of falling emissions,” he argued, adding: “China’s emissions have now fallen year-on-year for four consecutive quarters, extending what was already the longest sustained decline in recent history.”

Truss Takes Helm in UK

Newly elected UK Prime Minister Liz Truss is expected to place greater emphasis on boosting domestic oil and gas output than climate goals, against the backdrop of the worst energy crisis since the 1970s. At final campaign events last week, Truss had ruled out imposing another windfall tax on oil and gas companies to fund support for vulnerable consumers and struggling businesses. Still, she supports existing plans for a massive expansion of off-shore wind and nuclear power in the UK, and appears to be a lukewarm supporter of the country’s 2050 net-zero emissions target. Truss has also said there would be no rationing of energy in the UK this winter, but hasn’t provided further details.

Up to 130 new licenses for oil and gas exploration could be made available this autumn under Truss. Industry lobby group Offshore Energies UK has said the UK will become almost fully dependent

on imported oil and gas within the next 15 years unless the government grants new licenses and takes steps to encourage upstream investment. Official UK energy statistics show that the country’s primary oil production fell to a seven-year low of 41 million tons (about 820,000 b/d) in 2021.

New Biden Climate Leaders

US President Joe Biden named new clean energy and climate advisers last week on the heels of passing billions of dollars in climate spending. Ali Zaidi, a former New York energy official who currently serves as deputy to White House National Climate Adviser Gina McCarthy, will take over for her as Biden’s top “climate czar.” McCarthy will resign from her post on Sep. 16, according to the White House.

Biden also named John Podesta, who served in both the Clinton and Obama administrations and currently chairs the progressive think tank Center for American Progress, to a newly minted role as senior adviser for clean energy innovation and implementation. Podesta will oversee the implementation of the clean energy and climate provisions in the recently passed Inflation Reduction Act, and will chair the President’s National Climate Task Force, according to the White House.

Baker Hughes Restructures

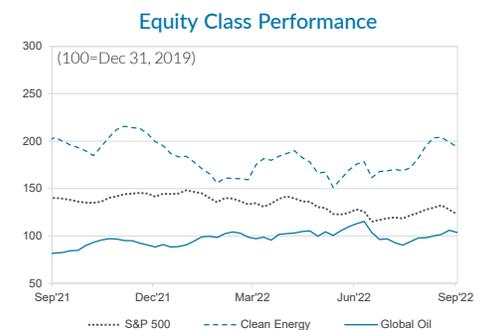
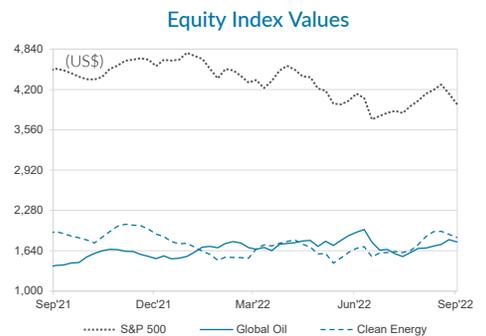
Oil-field services provider Baker Hughes announced this week that it will streamline its organizational structure to unlock efficiencies and better prepare for the energy transition. The company plans to combine its four existing product and service lines into two reporting segments — Oilfield Services & Equipment (OFSE) and Industrial & Energy Technology (IET). The restructuring will “simplify operations, enhance profitability and drive growth,” Baker Hughes said in a statement, estimating that the changes will save about \$150 million annually in operating

costs. The company’s new OFSE unit will integrate its oil-field services and equipment lines, while its IET unit will combine its turbomachinery & process and digital solutions divisions.

Conoco in Clean Ammonia

US independent ConocoPhillips is working with international energy players Jera and Uniper to develop a US facility that will produce low-emissions hydrogen and convert it to ammonia for export to Europe. Germany’s Uniper and Japan’s Jera said this week they are collaborating on a plan to produce 2 million tons/year of clean ammonia from a facility on the US Gulf Coast, with expansion potential of up to 8 million tons/yr. Jera and Uniper expect the project to “greatly accelerate the production and supply of zero-carbon fuels” globally. Ammonia from the planned plant would be supplied to Jera and Uniper under long-term sale and purchase agreements, with Europe as the primary initial export market.

CLEAN ENERGY EQUITY MARKETS



Source: S&P Global

EI NEW ENERGY DATA

ENERGY FUTURES: REFERENCE PRICES

	Sep 2	Aug 26	Chg.
Carbon (€/ton)			
ECX EUA	80.79	89.69	-8.89
CME GEO (\$/offset)	4.01	4.18	-0.17
Crude oil (\$/bbl)			
Nymex WTI	90.34	92.89	-2.55
ICE Brent	97.08	99.65	-2.57
Natural gas (\$/MMBtu)			
Nymex Henry Hub	9.11	9.37	-0.26
ICE UK NBP	56.21	65.75	-9.54
Coal (\$/ton)			
McCloskey CSX	200.00	199.00	+1.00
ICE Rotterdam	370.81	371.16	-0.35

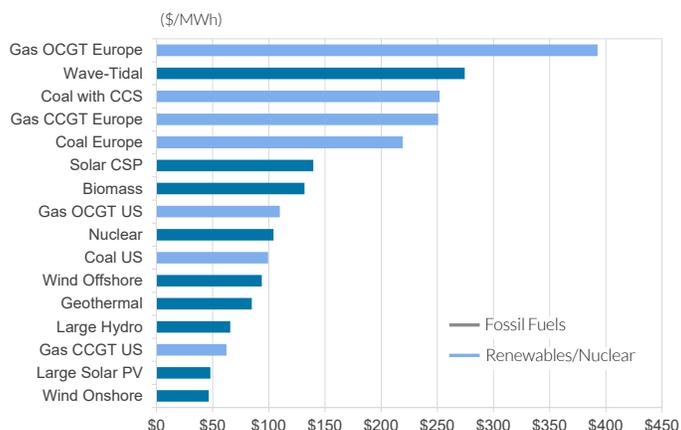
All prices are weekly averages and front-month. EUA = EU Allowances; GEO = Global Emissions Offset. Replaces ECX CER starting 3/30/21. ICE UK gas converted from p/therm. *Short tons. Source: Exchanges

GLOBAL ELECTRICITY PRICES

	Sep 2	Aug 26	Chg.
Europe (\$/MWh)			
Germany (EEX)	449.07	597.13	-148.06
France (Powernext)	534.87	636.95	-102.09
Scandinavia (Nordpool)	300.58	332.62	-32.03
UK (APX)	435.83	587.99	-152.17
Italy (GME)	562.17	668.99	-106.82
Spain (Omel)	169.74	169.96	-0.22
North America			
New England	95.03	110.10	-15.07
Texas (Ercot)	71.92	88.61	-16.70
US Mid-Atlantic (PJM West)	115.27	127.55	-12.28
US Southwest (Palo Verde)	360.90	100.55	+260.35
Canada (Ontario)	60.94	67.40	-6.46
Other			
Australia (NSW)	105.86	102.23	+3.63
Brazil (SE-CW)	11.64	11.01	+0.63
India (IEX)	94.12	69.80	+24.31
Japan (JPX)	190.63	174.37	+16.26
Singapore (USEP)	156.27	126.95	+29.32

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)

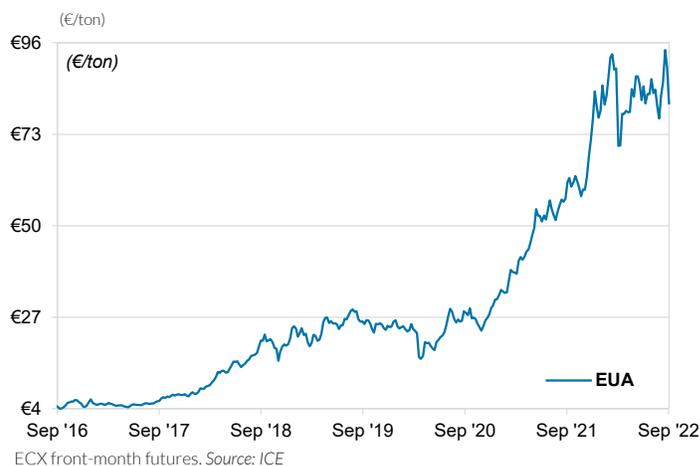
Sales Penetration		EVs = all New Energy Vehicles. EVs = plug-in hybrids and all-electrics. LDVs = light-duty vehicles. EFTA includes Norway, Switzerland, Iceland, Liechtenstein. Sources: China Association of Automobile Manufacturers, China Passenger Car Association, US Alliance for Automotive Innovation, 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

	Sep 6	Aug 30	Chg.
Europe (€/ton)			
EUA Dec '22	69.88	80.81	-10.93
US (\$/ton)			
CCA (Calif.) Dec '22	27.70	27.37	+0.33
RGGI (Northeast) Dec '22*	13.49	13.55	-0.06
New Zealand (NZ\$/ton)			
NZU (spot)	85.50	86.80	-1.30
Asia (\$/ton)	Sep 2	Aug 29	Chg.
China (National)	8.41	8.47	-0.06
South Korea	20.20	20.29	-0.08

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

EU CARBON FUTURES PRICES



ECX front-month futures. Source: ICE

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