

Energy Transition



INTELLIGENCE BRIEFING

ISSUE 56, MONDAY, AUGUST 22nd

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Moving Plastic Can Help Drive Global Circularity

Maryam Al Mansoori, General Manager, Rebound Exchange

The infrastructure for plastics recycling domestically is not yet complete in order to enable it to plug into a global system. Part of why plastic pollution exists is not because plastics are harmful, but rather because of collection methods and how we deal with plastics after use. Having the correct infrastructure on a domestic scale at a capacity can contribute to the global circularity for plastics. Rebound Plastic Exchange aims to be part of the solution to plastic pollution by providing a marketplace to trade recycled plastics in all forms, such as bales, flakes, and pellets. All members would be verified to establish trust to the entities that are on this exchange. When it comes to the materials that would be traded on the exchange, we bring in quality assurance through a unique certification protocol based on specifications and technicalities of the different families of plastics. This is creating a global common language for the trading of recycled plastics and is addressing the current fragmented state of the global supply chain.



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CLIMATEPENPAL.ORG



CONTINUED *Maryam Al Mansoori, General Manager, Rebound Exchange*

How do you see waste collection feeding into this platform?

While our focus is on B2B, we see tremendous business and investment opportunities for plastics collection as countries are still in varying levels of implementation. Germany, for example, has a collection and separation plastics system while in other places, lack of education and awareness still prevails. If there is a specific mechanism to start the collection at the household level, it can help recycling businesses pick it up, contributing to better financial revenue for recyclable products, that can then be sold on to an exchange.

Is there an existing market in the Middle East?

The GCC consumes a lot of plastic, and this has increased during the COVID pandemic. However, demand for recyclable plastics as a second life product is currently small, which is an opportunity for Rebound and the market. As a global platform, we can facilitate trade coming from the GCC to different countries, depending on the manufacturing and recycling capabilities of brands keen to introduce or increase their post-consumer recycled (PCR) products in their business.

How important are standards to market growth?

The plastics market is very regionalized, and this has meant that developing countries have been left out of the picture when it comes to capturing the feedstock and joining the trade elements or plastic exchanges on a global scale. This has led us to create this common global language which will enable buyers and sellers anywhere in the world to come on the exchange and have the same understanding of those specifications. Traders can see which material is in which country, what are the grades and how it is priced. This will start generating price transparency in the market directly between buyers and sellers, which will then allow for competition and indices to be built.

Can recycled plastic trade help accelerate the circular economy?

Today's circularity cannot be achieved on a domestic scale. We can do that by rewarding the full chain financially through the collection of those plastics, and then repurpose them to become different products. This needs to be done on a global scale because facilities which can absorb and recycle those tons of plastic may be in another country. What is clear is that there is demand and supply for plastics that can be collected and reused by multinationals and governments, to become part of the circular economy. We must move plastics around globally - we cannot wait for every country to build its own infrastructure to achieve equilibrium.

Is there enough knowledge sharing, expertise, and education of the industry?

There is still a knowledge gap in capacity building and infrastructure enhancement. The need is in household capacity building as individuals are part of the equation. If they do not have the knowledge to act, then we do not really achieve circularity or recycling in a proper form. Education can happen on two platforms - in schools and in companies. In this regard, implementing taxes, subsidies, and incentives are all part of the solution.

What are your views about the push for a global plastics treaty?

There needs to be a legally binding agreement for the accountability of each country and not only industries. Some countries are doing well but perhaps need more opportunity for investment. That is where governments can come in and incentivize companies that build facilities. There's no one-size-fits-all. We are not there yet, but we are close to the line.

FULL INTERVIEW HERE

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A Bold and Realistic Energy Transition



Sultan Al Jaber

UAE Minister of Industry and Advanced Technology
CEO of ADNOC

Record growth in renewables, representing over 80 per cent of all new power-generating capacity last year, is the clearest sign yet that the energy transition is gathering pace. But recent events have shown that unplugging the current energy system before we have built a sufficiently robust alternative puts both economic and climate progress at risk, and calls into question whether we can ensure a just transition that is equitable to all. A successful energy transition must be built on progress for the economy and the climate together. It must be based on scientific, economic, and engineering facts, appreciate the multiple dilemmas and challenging trade-offs, and accelerate the deployment of practical solutions. And for that, we need an inclusive approach that leverages the experience of all sectors of society and, critically, does not exclude the energy sector.

The world was already facing a profound energy-supply crunch as economies began to bounce back from the COVID-19 pandemic. The Russia-Ukraine conflict then made a tight market even tighter and forced countries to reassess their urgent near-term strategic energy needs. So the message for governments should be clear: Policies aimed at divesting from hydrocarbons too soon, without adequate viable alternatives, are self-defeating. They will undermine energy security, erode economic stability, and leave less income available to invest in the energy transition. What is needed is a realistic new strategy that is practical, pro-growth, and pro-climate. The strategy needs to appreciate the complexity of energy and industrial systems, and that the scale of the transition required is colossal, requiring greater alignment and collaboration on everything from capital allocation to product design, public policy and behavioural change. This means examining the demand side of the energy system first. Wind and solar power are making great advances, but most energy is used in heavy industry, manufacturing, construction, transportation and agriculture. These harder-to-abate sectors have the biggest effect on climate and thus require more investment, starting now.

While renewable-energy investment globally exceeded \$365 billion last year, combined investment in energy storage, carbon capture, and the hydrogen value chain was only \$12 billion. That is not nearly enough. The energy transition is estimated to need more than \$250 trillion of investment over the next 30 years. Obviously, no single country, much less a single company, can foot this bill. But financing isn't the only issue. Energy transitions take time. While wind and solar accounted for the vast majority of all new power-generating capacity in 2021, they still comprise only 4% of today's energy mix. As the world's energy needs grow ever larger, maintaining global energy security will require oil and gas to remain a significant

part of the mix for decades to come. That is why we must do more now to reduce the impact of oil and gas on the climate. Producers, governments, and the private sector must work together to make sure that each new unit of output is less carbon-intensive than the last. That will require supportive fiscal policies through tax incentives, operational efficiency via technology, greater commitments to reduce methane and flaring, and significantly greater investment in carbon-capture technologies. These realities are guiding the United Arab Emirates' approach to the energy transition, which involves continuing to meet global needs today while investing in the new energy systems of tomorrow. The UAE has three of the world's largest single-site solar plants, has invested in renewable projects in over 40 developed and developing countries, and plans to increase its renewables portfolio to 100 gigawatts by 2030. We have also invested in nuclear power and are laying the foundations of the hydrogen value chain, which is key to achieving net-zero emissions. While the UAE remains a reliable supplier of some of the world's least carbon-intensive oil and gas, we will reduce its intensity by a further 25% before the end of this decade. And, as the first country in the Middle East and North Africa to announce a 2050 net-zero strategic initiative, we are decarbonizing our economy sector by sector. We have established the region's first industrial-scale carbon-capture program, and all the electricity consumed by our national oil company now comes from zero-carbon nuclear and solar power.

As this year's United Nations Climate Change Conference (COP27) approaches, and as the UAE prepares to host COP28 in 2023, we need to focus on practical solutions that will help solve the trilemma of securing accessible, affordable, and sustainable energy supplies. If the COP process is to make good on the pledges of the Paris agreement, we need an inclusive dialogue on the framework for a realistic energy transition. This dialogue should bring everyone to the table, from governments and civil society to scientists and the private sector. It must include professionals from across the energy sector, because a rational discussion about the practicalities of an energy transition that reduces emissions without impeding economic progress is not possible otherwise. But let's not wait to start this conversation. If we are going to make good on the pledges of the Paris agreement, we need to deliver results now for the climate and the economy. Our ultimate goal should be to hold back emissions, not progress.

Source: Project Syndicate

Substituting Gas Ultimate Frontier for Hydrogen



Yusuf Macun
Managing Partner
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Supply chain disruptions and hyperinflation of raw materials are currently causing concerns for hydrogen project contractors. Other obstacles include scaling up and reducing the cost of electrolyzers. Mass scaling green ammonia production and other molecule production and potentially cracking back ammonia after transport into hydrogen are engineering issues that also need to be addressed. But despite these challenges, hydrogen needs to and is moving forward.

Where does hydrogen fit into the energy security and energy transition debate?

There may be an urgency to address the energy shortfall in the near term due to the geopolitical issues in relation to Russia's gas supply, but the medium to long term favors energy transition away from fossil fuels. When realized at scale, hydrogen will be a genuine energy security mitigator. It is clearly complementary to the existing low-carbon energy vectors. In our Hydrogen Investability Index last year, we identified energy security as one of the six pillars and a potential accelerator for hydrogen.

How does hydrogen fare compared to renewables today?

The renewable electron is crucial and will continue to hugely expand on a global scale. It is easy to implement and is indispensable to producing green hydrogen. However, electrification can only go so far. Renewable electricity along with decreasing costs of storage should take over existing electricity uses as much as possible. Green molecules are needed for heating, replacing grey hydrogen and other end uses. But the ultimate end use for hydrogen that would be difficult to deploy would be to replace natural gas in its most efficient uses. The production of electricity in gas turbines being replaced by hydrogen is possibly the most economically challenging - the ultimate frontier for hydrogen.

How has your Investability Index advanced interest in hydrogen?

We started by identifying which jurisdictions would likely have the greatest amount of activity and discovered that there was a lack of published data. We focused on a few important criteria including: regulation, general investability, enabling infrastructure, existence of heavy industries that could become off takers for green

molecules, energy security as a potential enabler or accelerator, and access to low-cost renewable resources at scale. The last one is certainly the biggest component of the levelized costs of hydrogen and therefore a key enabler. In terms of finance potential, low-cost hydrogen needs to be produced with low-cost capital and financing costs should also be lower than the equity in broader terms. We also need to make sure that we identify de-risking building blocks. We discussed with banks, debt funds, and credit rating agencies the importance of understanding the market. The enabling of liquidity in the market is crucial and the sooner we understand the market, the more players will be active.

Where is the Middle East in terms of hydrogen policies?

It is moving towards a more constructive direction, but we are not there yet compared to Europe, which uses carbon cap and trade to reward clean hydrogen. As such, the region is more focused on producing hydrogen for export. With the implementation of a Carbon Border Adjustment Mechanism underway, it is more promising for the Middle East to produce green hydrogen in compliance with the European taxonomy, extending the EU regulations to zones that could host greenfield heavy industries using hydrogen and export the green products.

What would be on your COP27 wish list?

Firstly, we need to relax a little bit about gas, which is a very efficient energy vector and much cleaner than several alternatives. It is acutely needed in the interim as part of the energy transition. Secondly, I hope stakeholders will continue to be supportive of a quicker energy transition, even if that means near-term pain in terms of costs. We need to be ready for that and we need to embrace that. Thirdly, we need to start thinking about pipelines. Europe is talking about that backbone, but we need to start thinking about linking key regions, however far they may be, starting with the nearer ones, and linking to key consumption areas. It is necessary and once it is there, it is for life.

[FULL INTERVIEW HERE](#)

INSIGHTS

The Indian Railway Coal Paradox



Bill Spindle
Council on Foreign Relations
International Affairs Fellow, India

The world's second largest government railway has switched to electric power, even as it transports record quantities of coal.

Here's one of the bigger ironies of my journey through India reporting on climate change and energy transition:

I traveled more than 5,000 miles by rail, virtually all of it on trains pulled by electrified locomotives; yet where ever I went I saw coal piled high on railway cars pulled by those same electric locomotives. The paradox captures the tricky turning point India and the world have reached in the transition from fossil fuels to renewable energy, primarily solar and wind.

The Indian Railways, India's largest energy consumer, has transitioned its fleet of locomotives to electricity not to save the world nor to "go green" for purposes of publicity (though the railway and Indian government love to boast about it). This transition, long ago from coal to diesel and more recently from diesel to electric, happened because it saves the railway billions annually on the cost of diesel fuel, nearly all of which India must import. This transition, long ago from coal to diesel and more recently from diesel to electric, saves the railway billions annually on the cost of diesel fuel, nearly all of which India must import.

My visit to the Chittaranjan Locomotive Works, after a ride on one of the last coal-fired trains on the planet, underscored how far the railway has come — and how far it has to go.



Despite going electric, has the railway really weaned itself off fossil fuels? Well, no. Since more than two-thirds of India's electricity is generated from coal, that's more or less the proportion of the electricity the railway is drawing on for its new power source. Now, since electrical propulsion is considerably more efficient than diesel power, progress is being made.

But India's larger dependence on coal is amply underscored by the long chains of coal transport rakes I passed in my travels.

As a spring heat wave and India's economic bounceback from Covid lockdowns strained the country's power grid, the railway has scrambled to race coal supplies to thermal power generation plants across the nation to limit power cuts. This is good business for the railway.

Coal remains the railway's single largest and most profitable freight class — another way the Indian Railways remains, like the rest of the country, highly dependent on coal.

The Russian invasion of Ukraine this year has cost India tens of billions of dollars as turmoil in the oil market has pushed up prices — even for countries, like India, willing to purchase discounted Russian oil

That has India — like Europe, albeit to a lesser and more self-tortured extent — looking favorably on coal. Where Europe is extending the operations of some coal generators it had planned to phase out, India is newly considering expansions to its coal fleet. Both moves are a nod to the growing concerns countries everywhere have about energy security amid the energy transition and a more turbulent geopolitical environment. Those worries can't be dismissed, with parts of Europe at war and tensions rising in Asia over Taiwan.

They will persist as long as the world remains deeply dependent on fossil fuels, whether it's Russian gas piped to Europe or Saudi Arabian oil shipped through the South China Sea.

[FULL ARTICLE HERE](#)

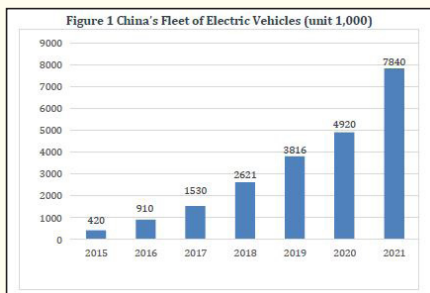
REPORT

ELECTRIC VEHICLES: HOW CHINA LEAPFROGS IN GREEN MOBILITY?

By: CN Innovation

With the electric vehicles (EVs) fleet breaking the 10-million mark by end June 2022, China leads the world in mobility electrification. During 1H2022, EV sales amounted to 2.66 million units despite economic downturn due to Covid lock-down, accounting for 21.6% of total vehicle sales. The whole-year sale, expected at 5 million, will easily break last year's record of 3.3 million. This Insight China report investigates the forces that drive China's EV success and looks into its future development.

Steady-fast growth



As shown in Figure 1, China's EV stock rose steadily over the last seven years, from less than half a million to over 7.8 million by the end of 2021 and over 10 million by now, ranking No.1 in the world in terms of EV stock, well ahead of the US (around 2.5 million by end 2021). EVs today account for 3.2% of China's total vehicle fleet but the Chinese EV fleet accounts for half of the global passenger EVs and 90% of electric buses and trucks.

Driving Forces:

Back in 2009, China officially positioned the EV industry as one of the "emerging strategic

industries", based on three strategic considerations:

- Energy security: China became a net oil importer in 1996 and since then, oil import dependency has continued to rise, reaching 75% now. Electrification of transport is an important means to reduce oil dependency.

- Local air quality: Road transportation is a major source of local air pollution, so replacing oil with electricity would help eliminate the tailpipe emission, thus improving the local air quality.

- And auto industry leap-frogging: Despite the fact that China became the world's biggest auto market in 2009, the country did not have its own technology and national champions, and all the vehicles running on streets were either imported or produced in China by joint ventures with Japanese, Korean and Western companies. The policymakers have realized that China could not compete on traditional internal combustion-engine technology but faced with an opportunity to compete in the EV industry, given everyone standing at the same departing line, let alone that China has competitive advantages in domestic market, manufacturing capability and battery supply.

A joint study by the International Council on Clean Transportation (ICCT) and the China EV100 (a Chinese EV industry association), published in January 2021, provided a retrospective review of the journey traveled by China's electric vehicle industry. According to the study,

China's EV industry has gone through four successive stages:

- 1) Prior to 2009: exploratory phase to determine what pathway to select toward a world-leading auto industry and when the new energy vehicles (including pure battery EV, plug-in EV and hydrogen fuel-cell vehicles) were chosen as a fast lane.

- 2) Between 2009 and 2012: pilot program phase with the confirmation of an EV development strategy and introduction of pilot programs on a massive scale such as "ten cities each having 1000 EVs" program, supported by government in R&D and direct subsidies.

- 3) Between 2013 and 2017: market gaining attraction phase with rapid growth of EV sales particularly driven by air quality goals, and enabled by both subsidies to consumers and a "double credit" (CAFE standards and EV quota) system for manufacturers.

- 4) And, since 2018: market openness and competition stage, with a policy shift from mere subsidies to a combination of incentives and regulations to further release the market's potential. The waiver in 2018 of joint-venture shareholding restrictions for the auto industry allowed Tesla to build its super factory in Shanghai in 2019.

The study provides an excellent account in great details of the Chinese EV development in these different stages, which contains lots on relevant data and information.

Source: © CN Innovation (www.cn-innovation.tech).

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