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ESG Global Leaders' Summit: Speech on Carbon-Reduction Challenges



Since China announced its 2030 Carbon-Peak and 2060 Carbon-Neutral goals in Sep 2020, it's been over a year and half. Photovoltaic new energy has been the red-hot sector with new energy index more than double in that period. Carbon-neutrality has gained wide-acceptance across the world. ESG considerations have been factored into the decision processes of major institutional investors. As traditional energy prices spike on the back of Russia-Ukraine conflict, the renewable energy complex has increased its assimilation into the global economy, ushering in the new age of Carbon-reduction.

The development of renewable energy has made the economies greener and more digitized. In China, for example, electrical vehicles are now more than 25% of the total vehicles. With electrification also came better automation, which in turn adds more value to the consumers. From the defensive strategy of limiting carbon-heavy electricity to the aggressive strategy of developing wind or solar renewable energy, there are still a long way to go. How do we achieve this transformation? This is the question that was answered by Mr. Liu Shijin during the 2022 Sina Finance ESG Global Leaders Summit. Mr. Liu is the former Deputy Director of State Council's Development Research Center and current Deputy Director of Economic Committee of the National Committee of Chinese People's Political Consultative Conference. **Mr. Liu highlighted a few suggestions: first, develop a growing Carbon-credit market to support green technology; second, establish regional carbon-reduction accountability; third, fast-track carbon monitoring and tracking infrastructure; and last, create relevant new framework and policy. Please find below Mr. Liu's comments. You may also find the original Chinese text at:**

<https://finance.sina.com.cn/esg/investment/2022-06-28/doc-imizmscu9132310.shtml>

Dear honored guest, today I'd like to talk about the topic of aggressive carbon-reduction strategy. Let's talk about carbon-reduction strategy first. We are now discussing how to transform the pressure to achieve Carbon-peak and Carbon-neutral into pressure to power our economic growth. This is a very

attractive and inspirational goal, but also not an easy one. When we say carbon-reduction, we can see three different types of carbon-reduction types.

The first Carbon-reduction type is Reduction-by-Cutting-Activity. This approach cut carbon by decreasing the activities that generate the Carbon-emissions in the first place. As we produce less, we release less carbon. This approach is very dramatic since it stops economic activities altogether, and only occurs in rare situations. Last year, China saw some areas deploy tactics like shutting down electricity supply in order to achieve short-term Carbon-reduction goals.

The second Carbon-reduction type is Reduction-by-Improving-Efficiency. This approach tries to improve the output efficiency with same unit of carbon release. By producing more products with same amount of carbon, this effectively reduces the per-production-carbon-emission. This is what we normally refer to as increasing energy-efficiency to reduce carbon-emission.

The third Carbon-reduction type is Reduction-by-Innovation. This approach looks for new innovative techniques or methods to achieve lower-carbon, zero-carbon, or even negative carbon-emissions for the same production outputs. There are examples in renewable energy generation like wind, solar, hydro, or biomass electricity generation. By replacing high-carbon coal fire generation with the new technology, we can generate the same amount of electricity with lower carbon-emission.

Across the three types, Reduction-by-Cutting-Activity is more rare and least productive. On the other hand, the Reduction-by-Improving-Efficiency is the more proactive. Given the current lagging technology and management, there's more room for growth. But Improving-Efficiency also has its limitations since the marginal improvements on return-per-carbo-unit will decrease as technology and management improve. More importantly, these improvements only occur within the existing technological and industry frameworks. Even if there's some local innovation, it's mostly micro-scale improvement rather than revolutionary innovation. We can achieve very high return on carbon, but it still fundamentally depends on carbon-input. For example, China's coal-firing plants have very high world-leading efficiency standards, but it's still using coal for electricity-generation.

I will now focus on Reduction-by-Innovation, which means jumping out of the existing technology and industry limitations. This approach has a few unique characteristics:

1. Innovative carbon-reduction can eventually substitute traditional high-carbon technology and industry. When we talk about Green-transformation, we're basically talking about technological innovation to replace the high-carbon technology with low-carbon, zero-carbon, or even negative-carbon technology. So innovative reduction is basically technology substitution.
2. Innovation carries its own uncertainty and impulses, which by definition means no pre-defined boundaries. It's therefore hard to predict how far innovative carbon-reduction can go. For example, if we were to achieve nuclear fusion technology and commercialize it, our understanding about renewable energy will change dramatically.

3. Innovative Carbon-reduction can dramatically decrease the cost of dealing with climate change. Innovation will bring about competition, and competition will lower prices. We now see a lot of green products costing more than traditional products and command a “green premium.” But over time, we may see the “green premium” turning into “green discount” such as in case of photovoltaic energy. In the last ten years, the per unit cost of solar energy has reduced by 80%-90% so that it’s currently below the cost of coal-generated electricity. When we talk about climate change challenge, one of the biggest issues is the cost. Therefore when the cost drops due to continued innovation, it will greatly improve our confidence in tackling climate change challenges.
4. Innovative Carbon-reduction will create more consumer surplus through supplementary benefits and values. For example, we’re seeing strong sales of new energy vehicles that account for over 20% of total industry sales. Why do the consumers buy new energy cars? Carbon-reduction is not the only reason, because the consumer benefit from lower running cost, better integrated electronics, more comfort, different sense of control, and more automatic self-driving functionalities. In other words, when consumer buy the new energy car, most of benefits may be other than carbon-reduction, which means when we produce such cars with the original intention of achieving carbon-reduction, we actually received many peripheral benefits.
5. Innovative carbon-reduction initiated and accelerated the digitalization of high-carbon industries such as energy industry. Digital economy is another economic state after agricultural and industrial economies. Our whole economy is experiencing the digital transformation. Even without the pressure from 3060 Carbon-reduction goals, many high-carbon industries such as energy, manufacturing, transportation, constructions will move towards digitalization. But the innovative carbon-reduction are pushing and challenging these industries to move more quickly towards digitalization, and even become pioneers in the process.

In summary, innovative carbon-reduction indeed has initiated and led our economy’s Green and digital transformations.

When I spoke about 3 types of carbon-reduction, the first two types of Reduction-by-cutting-activity and Reduction-by-improving-efficiency are more defensive strategies. But Reduction-by-Innovation is a more aggressive strategy. In the past, we have gained some understanding about the aggressive strategy, but the way we implemented the strategy is still quite conservative. Therefore, our main challenge next is how to change our strategy from a defensive one to an aggressive one. There are still some challenges when we look at how to transform the strategy, with a key question around the market incentive. The different strategies can be realized through their goals and policies, but more practically through their incentive systems.

Next, I will focus on the carbon-credit market. Because carbon-emission has global externality impacts, we can’t count on market to directly manage it. We’ll need government to get involved and provide directions to the market. There were famous economists who researched climate change, such as Nobel prize winner William Nordhaus and English economist Sir Nicholas Stern. These leading of climate change economist value role of the markets and have called for pricing of carbon-emissions. Specifically, this means carbon credit, carbon trading, or carbon tax. In actual practice, we notice that whether it’s the pioneers of the European carbon-emission market or the China’s carbon-emission market, the size and impacts are still relatively small or below expectations. There are some structural deficiencies that cause such outcome.

1. Only some high-carbon-emission industries and companies are included in the market. For example, only power-generating sector is included, which is far too limited compared to the whole market. When the coverage is not comprehensive, the issue of fairness comes to the forefront.
2. Most initial carbon-credits were allocated for free. And we only have transactions when excess savings became available, which means the overall volume is small.
3. Carbon-credit allocation used grandfathering or benchmarking. But it's challenging now to increase our carbon-reduction goals when we must consider electricity supply's safety and stability. The regulators may find it hard to determine if the electricity supplier really face the challenges they say. When there are distorting factors, the role of carbon-credit market in price-discovery, balancing supply & demand, and encouraging innovation will reduce dramatically. Furthermore, the current carbon-reduction market is more tailored towards defensive strategies of improving efficiency. While the market does want to encourage innovation to reduce carbon emission, many of the carbon-emitters are heavily reliant on existing methodologies or lack the interest and capability to truly innovate. And when they do innovate, it's more of a marginal improvement rather than a revolutionary change. Most of the innovators in new energy came from outside of traditional energy industries. In addition, in China Certified Emission Reduction allows only 5% offset by carbon credits. While it does force emitters to improve their own carbon-reduction status, it also doesn't give enough incentive for the market to push for innovative alternatives.

Given the situation, we want to transform from a defensive strategy into an aggressive strategy.

When we achieve the 3060 carbon goals, we can learn from China's experiences from our decades of economic reforms.

To have a successful transformation, we must manage well the relationship between the existing activities and additional activities. Our reform path typically involves having a small increase in additional activity, which is very lively and grows up to take bigger roles. The same principle can apply in energy transformation, where we prioritize new additional energy, use new to lead the old, strive to innovate, and mobilize market forces to support our aggressive carbon-reduction strategy.

Our high-carbon energy sector has high level of existing activities. While there's room for some carbon-reduction, such reductions will get harder, and cost will become higher over time. On the other hand, as the additional new energy activities increase, the increasing volume and improved technology will reduce the average unit cost quickly. Indeed, some green energy's unit cost has become lower than the traditional unit cost.

From the carbon-reduction perspective, we can decrease carbon-emission by improving efficiency from the traditional energy production or by promoting new energy and new technology. Because the new technology has low carbon-emission to start with, they'd have strong advantage in terms of carbon-reduction targets. This will eventually accelerate the increase in new energy ratio. The aggressive carbon-reduction strategy centers on holding the volume steady to ensure energy security, then shift focus towards incentivizing new energy technology. Such incentives must be a mutually supportive three-pillar-system:

First pillar: we must create a comprehensive growing carbon-credit market to support green-technology innovation. Here we propose one concept of “growing carbon-credit,” which refers to lowering or offsetting carbon-emission of previous standards by utilizing low-carbon, zero-carbon, or negative-carbon technology for the same outputs. The “growing carbon-credit” can co-exist with current carbon-credit market, where current carbon-credit market is mostly encouraging existing activities to reduce carbon-emission, and growing carbon-credit market is focused on encouraging additional activities driven by technological innovation.

Second pillar: to form a regional self-monitoring carbon-reduction accountability system. When we talk about technological innovation, their development will depend on market demand. To increase the demand for technological innovation, we must make sure our accountability system is effective. We can consider leveraging the principles of the Paris Climate Agreement and encourage all the regions to proactively set a realistic yet challenging carbon-reduction target. China has formulated the “1+N” policy framework where the overarching “1” is the 3060-policy target, and the “N” represents all the subsequent sector-specific or industry-specific policies. We can work closely within the “1+N” framework to have layers of carbon-reduction targets and accountability across provinces, cities, districts, and counties. These regional carbon-reduction targets can be met through direct carbon-reduction, develop growing carbon-credits, or purchasing existing carbon-credits. By creating such demands, we can utilize the carbon-reduction accountability system to support green technology and kick start the energy transformation.

Third pillar: to accelerate carbon-monitoring and carbon-account infrastructural buildout. Regardless of whether we push for growing carbon-credit market or perfecting carbon-reduction accountability system, the prerequisite is a qualified carbon-accounting system. This is unfortunately a big shortcoming right now. Therefore, we’d suggest that we use a top-down approach in the early phase of building the carbon-accounting system. This way, we can figure out basic situation, then work hard to roll out carbon-accounts for enterprises and other institutions, or even personal carbon-accounts where possible.

For enterprises, they should popularize ESG evaluations and standardize ESG reporting amongst public and large companies. At the same time, more funding activities can be shifted to green-funding channels, leveraging on the growing carbon-credit market to develop more financial products.

Lastly, green innovation needs technological innovation as well as regulation and policy innovation. We mentioned aggressive carbon-reduction strategy’s three main pillars, and they in fact belong to regulatory innovation. There may be different opinions in the short-term about such regulation innovation during our green transformations. **Under our national guidance, we can test the framework at appropriate areas, allow some room to explore, and gather valuable experience to gradually perfect the system and roll it out. This is how China achieved successful economic reforms before, and is still applicable to our current green innovation and transformation.**

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