

# THE FUTURE OF LOW CARBON GROWTH

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In the wake of the economic crisis, the conversation about global cooperation to deal with climate change has shifted almost entirely to a discussion about the competitive economic advantage to be gained from leading in so-called clean energy technologies. What started among low carbon advocates as a shift in rhetoric and emphasis to reflect the prevailing global economic anxiety has now come to represent an important structural change in the movement toward low carbon energy.

The drivers are still the same. Governments and companies still look to clean energy, mostly renewable energy but increasingly natural gas and nuclear, to insulate their economies from volatile energy prices, protect them from supply disruptions, alleviate local pollution issues, contribute to climate change solutions, and seek economic gain from greater access to energy or as a creator of low carbon technologies.

Over the last several years the vision for achieving all of these things rested inside the notion that the international community would agree to take coordinated action to decarbonize the energy sector—removing or fundamentally altering the role of all fossil-based energy sources—over the next four or five decades. This vision provided the theoretical framework through which climate change would be manageable and the market for low carbon technologies would be enormous—hence the need to be a competitive leader in the field of low carbon energy.

This type of top-down coordination and certainty, long criticized by some as naïve and unworkable, afforded those who believe in the need to transition to a new

energy system an organized and somewhat inspiring vision of how such a transition could be achieved in developed and developing countries alike, with lots of potential gains to go around. It appears that this vision has failed to materialize for a variety of reasons, and the momentum for shifting to a low carbon energy system is now driven almost entirely by efforts coming from the aggregated national ambition of specific countries, emerging economies being of chief importance.

Emerging economies are expected to make up the bulk of the growth in energy demand in

lesser-developed markets as platforms for their own technology ventures. Many global energy companies are using new business ventures and strategies to help these countries meet their wider development goals while fulfilling their basic energy needs—though many face challenges.

A transition to low carbon energy sources requires, first and foremost, a market for those technologies and sources. Countries like China, India, and Brazil represent the future of energy demand growth and, in the case of the first two countries, the future largest energy markets in the

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the coming decades. As the global centers of growth and expansion they will have increasing influence over how new energy markets evolve—commercial frameworks, technology sharing and development, regulations, and preferences for fuels and technologies that meet their societies' specific needs. Many of these countries have integrated new notions of sustainable development driven by local pollution, energy security, climate change, and social development goals that are likely to bring about energy systems that are different from U.S. or European models of energy infrastructure and use.

These development frameworks influence how companies compete and succeed in these markets. In some cases they are serving to drive down the cost of traditionally more expensive energy technology options. These countries also serve as models for energy development in lesser-developing countries, and, in some cases, are using

world. To the extent these countries prioritize low carbon energy sources and technologies in their development pathway, they create markets.

China's low carbon ambition gets the most attention here in the United States. China is at once the largest greenhouse gas emitter and the largest market for clean energy technology. Depending on which side of the debate is speaking, China is either now the global leader in clean energy growth, and "eating our lunch" as a result, or an environmental laggard using lots of high-level targets and big renewable energy projects to distract attention away from their enormous fossil-based energy consumption. Both perspectives miss the point about what is actually happening in the global clean energy landscape.

First, as stated earlier, climate-relevant low carbon pathways are not a valid metric of assessing the low carbon strategies in these markets. Clean energy

technology meets a host of domestic political and economic objectives and attracts a great deal of positive international attention and financing for these countries. This means the trend is not about emissions reduction at its base, but about all the attendant benefits that come as part of the clean energy vision.

Second, the outlook for clean energy investment does not look bright, but some countries have marked out this territory as a strategic area of growth and are determined to realize that vision. Most clean energy technologies like solar, wind, biomass, and nuclear require some sort of government support in terms of both policy and financing. Governments are hurting right now, and much of the momentum behind clean energy spending in the last two years has been the result of global economic stimulus programs that are likely to run out.

The exception to this statement is in rapidly emerging developing economies. These countries face economic challenges too, but clean energy technology represents a much more serious and fundamental part of their development strategy than it does in many developed economies (the EU aside). Both China and India, for example, have set renewable energy and emissions intensity targets—backed up by national law and programs—that will continue to drive domestic demand for clean energy and energy efficiency technologies and services.

The targets are not overly ambitious in a climate change context but are a significant departure from business as usual, and—as we have seen from China’s most recent Five-Year Plan (its twelfth)—clean energy targets and programs are becoming more deeply ingrained in the development strategy because of these countries’ core beliefs

about the unsustainable nature of development pathways that rely on conventional energy alone. Each country faces significant challenges in deploying clean energy technologies and systems, but there are signs that important progress can be made on some key obstacles like driving down technology cost, developing new distributed power generation models, and achieving higher levels of renewable grid penetration.

Rest assured the United States will not forfeit its role in the clean energy markets. Many U.S. companies are involved in the finance or technology side of the growth happening elsewhere—as the global supply and value chain for these products and services is truly international. Low carbon pathways, however, are about more than manufacturing wind turbines or owning the rights to an important battery technology. The pathways are about learning by doing, changing infrastructure, innovating systems, and redefining the future.

These countries have latched onto the vision of low carbon growth in a pragmatic yet determined way. It is unlikely that they will lead the world down a low carbon pathway that resembles the low carbon ambitions of the last several years, but make no mistake, they are the ones leading. If the United States wants to take a more active role in developing this market, it should look for ways to start transitioning the U.S. market toward favoring clean energy investments, perhaps first by looking at areas where outdated infrastructure and facilities need to be updated or replaced, or areas where the United States can cultivate an existing technological advantage and continue to work with other countries to learn from their progress and mistakes. ■