

Paradigm Shift: The Shifting Landscape of Climate Policy

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Prologue

In 1962, the scientific historian Thomas Kuhn published "The Structure of Scientific Revolutions." His much-heralded treatise set forth an explanation of the causes and effects of revolutions. To Kuhn, a scientific revolution entailed an abrupt inversion of thought, a severing of trajectory, a "change of the rules of the game" so to speak – an event he termed a "paradigm shift." Kuhn's now-popular phrase is an apt description for what the U.S. and the world are in the midst of in terms of climate policy. Indeed, the developments in climate policy that we will discuss over the course of this article represent a dramatic shift in the rules of the game that will do much to alter the ways in which all businesses operate in the years to come.

Developments in U.S. Policy – the "Carrots"

With the arrival of the Obama Administration and with the Democrats attaining a majority in both Houses of Congress, 2008 represented a watershed moment in the history of climate change policy. This watershed moment saw itself manifested in two forms. The first was increased government support for renewables and energy efficiency – what one might deem as the "carrots" of government policy (in contrast to the "sticks" of government policy, which we will discuss next).

Renewables – any source of energy such as sunlight, wind, tides, and geothermal that is generated from resources that can be naturally replenished – and energy efficiency – getting the same utility out of less energy – have long been supported by the government through tax incentives, subsidies, and mandates. The passage of the American Recovery and Reinvestment Act in 2009 (the "Stimulus Bill") boosted support for renewables and energy efficiency to a new level, however. Indeed, the \$787 billion Stimulus Bill contained provisions for \$67 billion targeted at clean energy. This \$67 billion, which is some 3 times the inflation-adjusted amount spent on the Manhattan project, was unprecedented.

The second area where the government has provided significant support – or carrots – has been in the form of tax incentives. To help support renewable power generation, the government has long provided something known as Production Tax Credits or Investment Tax Credits. These tax credits support renewable projects by allowing companies that invest in renewables to write off this investment against other investments they make. Given that most renewables projects do not generate much, if any,

income for the first few years of operation, renewable project developers would partner with a business that had income to offset. These partners – usually banks – would provide what became known as tax equity. With the downswing in the broader economy, however, this tax equity funding went away. To compensate, the government as part of the Stimulus Bill converted its Production and Investment Tax Credits into actual cash grants, which have done much to compensate for the loss of tax equity in the market in 2009 and continue to spur investment.

Similar to tax incentive for renewable *power* production, renewable *fuels* tax credits have been around for a number of years. These tax credits are primarily aimed at providing tax credits to blenders who mix renewable fuels into the fuel supply (blenders, for instance, can receive \$0.45 per gallon of corn ethanol blended). Historically, almost all of this renewable fuel has been corn ethanol (a gasoline substitute derived from corn). As the ethanol industry evolves, increasing amounts of higher-efficiency and lower carbon renewable fuel substitutes (such as “second generation” fuels like cellulosic ethanol) are projected to penetrate the fuel supply.

As part of this evolution in the renewable fuels industry, there are movements underway to change the nature and structure of tax subsidies. Renewable fuel credits have long been criticized for being agnostic when it comes to the carbon and sustainability effects of biofuels. Current studies suggest that corn ethanol, for instance, only marginally decreases carbon output but has long been subsidized at similar levels to renewable fuels that lead to greater reductions.

2010 will be a pivotal year on this front as there are a number of legislative movements underway to change the nature of these fuel credits. One side is arguing for their abolition entirely in favor of mandates alone being a more efficient market mechanism. The other side is arguing for “performance-based” tax credits. These tax credits would replace existing credits with tax credits determined by a sliding scale based on carbon footprint and sustainability.

The “Sticks” of Government Policy

The second way in which the new Administration has acted has been by deploying new “sticks” through its policies. On the stick side, the most significant action the government has taken to date has been in the form of mandates. Mandates such as renewable electricity

standards and renewable fuel standards, both of which mandate the portion of the power and fuel supplies that must be derived from renewable sources, have long been in use. Indeed, most states have Renewable Portfolio Standards (sometimes called Renewable Electricity Standards). These standards (“RPS”) require utilities to produce a minimum fraction of their energy by a certain date from renewable sources. These renewable sources include wind, solar, biomass, and geothermal primarily.

The push to augment these mandates has intensified in the past few years. In particular, there are efforts underway to create a federal RPS. This is currently proposed in the national climate legislation being debated. Such a system, assuming it could overcome the legislative and legal hurdles it will face (the latter being a result of the Commerce Clause, which limits the regulation of interstate commerce), would lead to nationally-mandated levels of renewables as a portion of the power supply, which could supersede state-level mandates.

On the fuel side, there are similar mandates in place. A national renewable fuel standard (“RFS”) already exists, which requires 5 billion gallons of ethanol (as compared to the total fuel use in the U.S. each year, which is around 140 billion gallons). An updated renewable fuel standard is in the final stages of rule-making by the Environmental Protection Agency (EPA). It is expected to be published in the Federal Register by the second quarter of 2010. This updated RFS would increase the mandates from 5 to 15 billion gallons by 2022 for corn ethanol and add provisions to mandate a whopping 16 billion gallons of cellulosic ethanol by 2022 (an aspirational target given that today only about 10 million gallons per year are produced). Carve-out provisions have also been included for other advanced biofuels.

The second big stick out there is perhaps the most discussed – that is, the prospect of a “cap-and-trade” system. The “cap” refers to setting a cap or limit on total carbon emissions in the country for each type of industry that creates meaningful amounts of carbon, such as power plants, refineries, airlines, and manufacturing facilities. The “trade” refers to a system whereby a facility that produces more carbon than it is allowed to produce under the cap trades “emission credits” with another facility that produces less carbon than it is allowed to produce. While there is a lot of attention paid to the potential headline amount of a carbon tax (e.g., whether the tax will be \$20 per ton or \$40 per ton), it is important to understand that the net effective tax paid by large carbon producers will be reduced by the amount of “ini-

tial credits” or “initial allocations” they receive from the government and by the extent to which they can pass on the carbon tax to end users (such as a refinery passing on the tax to the consumer at that gas pump). In Europe, for instance, the combination of initial credits and market pricing amazingly led to the largest carbon producers initially seeing a net increase in profits.

With this as background on how cap-and-trade works, let’s talk briefly about the politics of cap-and-trade in Washington, DC. In June, the U.S. House of Representatives barely passed its version of cap-and-trade legislation – known as the “Waxman-Markey” bill – by a vote of 219 to 212. The US Senate, however, has proven to be a much tougher battleground. A similar bill known as the Kerry-Boxer Bill was introduced in late October but has yet to advance to the floor for a vote. This bill is similar to the House bill in terms of the emissions targets called for (~20% from 2005 levels by 2020). One of the most contentious issues is around offsets, which in the House Bill are capped at 2 billion tons per year, of which 50% can come from abroad. This number is half that in the Senate Bill. Assuming \$10 per ton of carbon (a fairly conservative assumption) 50% of 2 billion tons would represent \$10 billion per year going abroad. Consequently, this has turned into one of the most controversial parts of the bill.

For similar reasons, so, too, is trade protection. In last-minute negotiations before the passage of the House Bill, protectionist provisions were added to attain the support of congressmen from states with heavy industry. These provisions called for the taxation of manufactured goods imported from countries without commensurate carbon regimes. These measures were aimed primarily at China, which is not expected to have as stringent a carbon reduction regime as the U.S. would have were Waxman-Markey to come to fruition.

Given the number of contentious issues raised by cap-and-trade legislation, the debate over Waxman-Markey and Kerry-Boxer has turned out to be immensely contentious. Following the election of Scott Brown to the Senate in January 2010, which did away with the Democrat’s supermajority in the Senate, passing Waxman-Markey or any comparable climate legislation has become increasingly unlikely. Indeed, many are now saying that the Waxman-Markey and Kerry-Boxer bills are dead. Some Senators – including, most notably, Lindsey Graham, Joe Lieberman, Susan Collins, Olympia Snowe, Mary Landrieu, and Maria Cantwell – are pushing forward revamped bills but given the approaching mid-term

election in November and the fact that any revamped bill would have to be re-passed by the House, getting climate legislation passed in 2010 will undoubtedly be tough.

This uncertainty begs the question as to what happens if the Senate does not pass any cap-and-trade legislation this year or next year, which leads us to the third and final “stick” of U.S. policy – forthcoming regulation by the Environmental Protection Agency. A 2007 Supreme Court Case, *Massachusetts v. EPA*, ruled that the EPA must evaluate the health effects of greenhouse gasses and, if they were found to be harmful, regulate the emissions. This finding was shelved during the prior Administration but in April of 2009, after the inauguration of the new Administration, the EPA announced that it had found carbon emissions “harmful.” This finding that CO₂ emissions are harmful gives the EPA a statutory responsibility to regulate CO₂ under the Clean Air Act. Consequently, the EPA will start to monitor carbon emissions. According to the rule just finalized at the end of 2009, the EPA will require reporting on behalf of the 13,000 largest emitters of carbon starting in 2010 and could start to regulate carbon emissions as early as 2011.

The International Story

Having discussed what is happening domestically, it now makes sense to turn our attention toward what is happening internationally. As we will see, the paradigm shift we talked about at the beginning is not unique to the U.S. Indeed, it is arguably even more pronounced abroad where opportunities in clean energy are arguably even more bolstered by strong government support.

Two statistics to illustrate this point: First, recall the statistic at the start of this article that the clean energy provisions of the U.S. Stimulus Bill represented three times the amount spent on the Manhattan Project. This amount represented ~0.4% of U.S. GDP. As a percentage of GDP, the clean energy-related provisions of China’s Stimulus bill – funding for things like low carbon vehicles, an advanced electric grid, water and pollution control, solar, and wind – were six times that of the U.S.’s. (China’s Stimulus provided \$221 billion of clean energy related investment, which represented 3% of their GDP).

A second statistic: when most of the world is talking about renewable fuels constituting high single-digits or low double-digits of the fuel supply, a whopping 54% of Brazil’s energy comes from renewables. This is largely a

result of regulatory and legislative shifts the government started making in the 1970s to support renewable energy (primarily sugarcane). This makes Brazil one of the most attractive places to do renewables investing.

In talking about the international scene, we would be remiss if we were not to discuss the international climate discussions underway, which have the potential to escalate the level of commitments countries are making to reduce their emissions. The Kyoto Protocol was signed in 1997 and enacted in 2005 but will expire in 2012, necessitating the need for a new global climate agreement. To this end, the UN hosted a climate change conference in Copenhagen (December 7–18, 2009). The potential for a global climate accord, however, is rife with discord. Such conflict is fostered for three main reasons.

First, is the debate about how to think about responsibility and commensurately, how to define emission-reduction targets. Emissions statistics by country highlight the crux of the debate. While rivaling that of the US in terms of annual emissions – 7.2 gigatons per year vs. 7.1 – China's emissions per capital are actually far less. Add to this the fact that the U.S. has been emitting for far longer and you get a complicated discussion as to responsibility, which is doing much to inhibit the path toward a global accord.

The second major issue is about ensuring comparable emission reduction targets. Amongst developed countries, there is a vast disparity in targets being sought. Some countries and regions like the European Union are targeting as much as 20-30 percent reductions over 1990 levels. This is far higher than the U.S., which is calling for only 4 percent reductions over 1990 levels (and note that even this has not yet passed Congress).

Finally, there is the issue of how to share the cost of reductions between the developing and developed worlds. Some, like China, are pushing for significant sums. While any transfer of national wealth will be controversial, what is not controversial is the extent of the opportunity developing countries provide. Indeed, it is clear that without abatement in these developing countries – such as preventing deforestation in Indonesia or cultivating biofuels elsewhere in Southeast Asia – global climate change abatement will not be possible. The trouble is, however, that the countries where the opportunity is greatest do not have the resources to build the infrastructure to achieve these opportunities. This makes some global compromise necessary in terms of sharing costs.

Fortunately, this was one of the most significant accomplishments coming out of Copenhagen. Indeed, although Copenhagen did not accomplish much, it did accomplish two notable feats. First, the conference got China to commit to transparency in terms of their emissions and abatement, a step many see as a necessary precursor to a carbon reduction regime in China. Second, the developed world, under Secretary of State Hillary Clinton's lead, committed to mobilize \$100 billion per year to help developing countries. Both were significant achievements.

Recall, however, that the purpose of Copenhagen was to create a legally-binding accord that will replace Kyoto, which expires in 2012. Significantly, this did not occur. The optimists are now gearing up for the next meeting in Mexico City at the end of this year but it remains to be seen whether a global accord can be worked out.

Conclusions

Looking ahead to 2010 and beyond, there are a few things worth keeping an eye on. The first is whether the U.S. Congress passes cap-and-trade legislation. This could happen in either its current form (unlikely) or in the form of a new, slimmed-down version of Waxman-Markey / Kerry-Boxer (still difficult). The second key policy thing to keep an eye out for is legislation – either in a standalone bill or as part of the energy bill – to bolster renewable portfolio standards. This is more likely than a comprehensive climate bill but will nonetheless still be difficult. The third key issue and one that is particularly important for the biotech industry is what happens to tax incentives in the industry. And finally, although less directly relevant but more indicative as a bellwether of the direction of global sentiment, is how close the global community comes to getting a legally-binding accord by year-end. Mexico in November 2010 will be the time when this would happen.

All in all, 2010 will be a critical year that could do much to bolster the unprecedented boost in support for clean energy we saw occur in 2009.