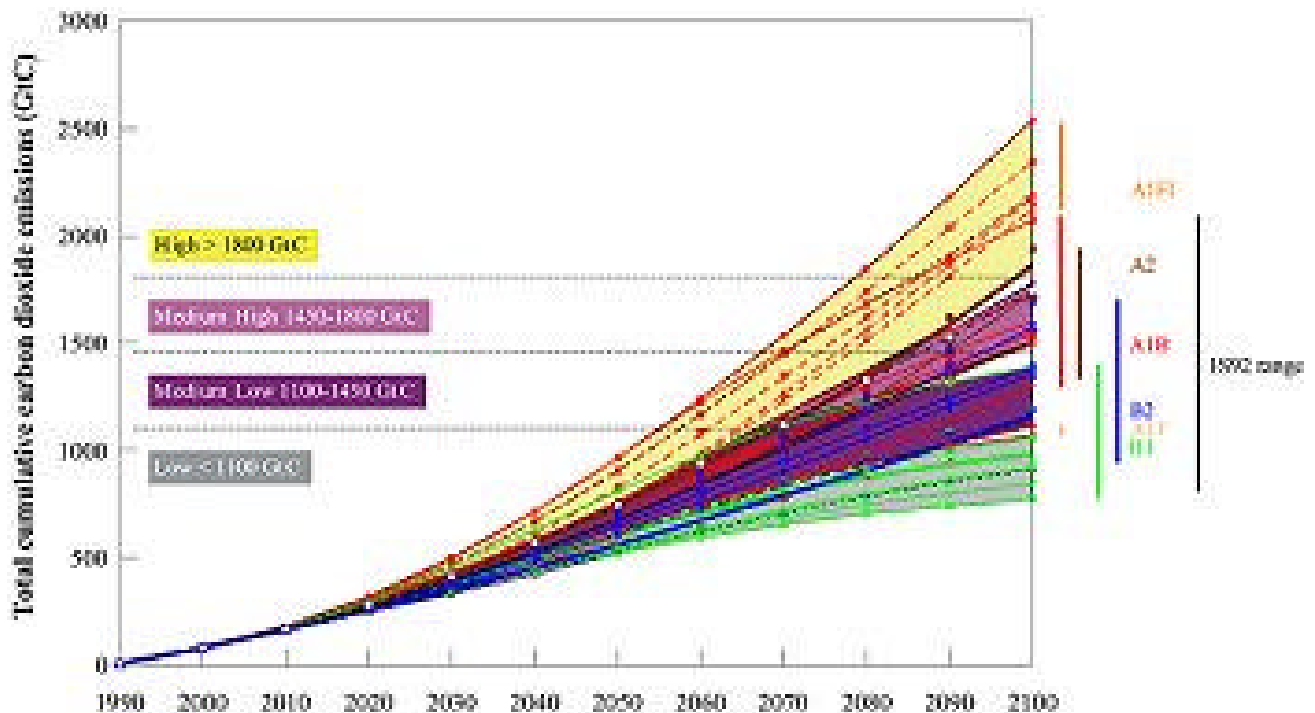


The Climate Policy Story

Since the late 1980's the prominence of climate change as an environmental issue (and by extension, an energy issue) has skyrocketed. Many in the policy arena consider it the greatest long-term environmental challenge facing the earth. Some consider it the greatest challenge facing humanity. Yet while the science has become very strong and the overall consensus is that greenhouse gases are leading to climatic disruptions, the long-term nature of the problem makes policies to address this challenge difficult to develop in the shorter-term political arena.

Nonetheless, the Kyoto Protocol, which was negotiated in 1997 and has been ratified by 120 nations, invokes binding limits on emissions. Kyoto's limits are generally viewed as just a small step towards stabilizing atmospheric concentrations of greenhouse gases at a level that will have acceptably manageable consequences on the global environment, human health, natural resources and physical infrastructure. While the future of Kyoto remains blurred by Russia's and the United States' hesitancy (or more) towards ratification, Kyoto only limits industrialized nations' emissions at approximately 5.2% below 1990 levels in the period 2008-2012. Cuts of 50% below 1990 levels are necessary to stabilize concentrations at manageable levels.



Source: IPCC Special Report on Emissions Scenarios, 2000.

Climate policies are challenging for the energy industry, and there are likely to be big winners and losers. Estimated costs for compliance with Kyoto range widely but are generally on the order of \$100 billion. As climate policies are still forming, there are also significant risks entailed in betting on one future carbon constraint policy over another.

However, we can state with certainty that:

- Limits on greenhouse gas emissions, particularly carbon dioxide, will be imposed on European and other nations' energy industries. These limits are likely to become more stringent over time but the policymaking will be highly political and confused for decades.
- Technologies to reduce emissions exist and are evolving, but not equally between different sectors of the energy industry. Currently, there is nothing close to a low-cost "solution" to greenhouse gas emissions from fossil fuels.
- Europe and Japan will likely face the greatest short and medium-term limits on greenhouse gas emissions. Other countries are likely over time to impose limits, but may be at a short-term competitive advantage because of lower cost energy. In the long-term it is possible the control technologies employed in Europe and Japan may give these countries and their energy industries a competitive advantage over the "late adopters."
- Trade disputes may arise between countries with strict limits and those with less strict limits.
- The investment community already is including "carbon liability" in its valuation of companies. This practice will grow as policymakers impose more stringent limits on greenhouse gas emissions.
- Policies and incentives are already in place to capitalize low-greenhouse gas energy production and emission offsets, especially in developing countries and in the Economies in Transition. As carbon constraints intensify, these incentives and financial resources are likely to grow.
- A growing market in emissions reductions exists and will offer companies facing constraints the option to reduce their own emissions or offset their emissions.

Different sectors of the energy industry face different impacts, and there will be winners and losers.

- Electric utilities may face greater costs imposed by emissions trading, depending on the fuels they use. Costs vary from nation to nation but estimates for 2006 range from €6/MWh in the UK to €3.1/MWh in Scandinavia. Over time these will rise rather than fall. The extent to which they are able to pass these costs on to consumers is not completely clear, but likely.
- Coal producers and consumers may face the greatest challenges as coal consumption is currently the most carbon intensive source of fuel. However, the existing stock of coal fired boilers and rising energy demand will mean that coal will remain a large portion of the global energy mix.
- Gas producers and consumers may benefit in the short and medium term as long as supplies are adequate. Gas is almost half as carbon intensive as coal and technologies for its use are relatively low cost.
- Renewable energy may benefit because of its very low life-cycle greenhouse emissions. In addition to avoiding carbon costs, the renewables sector benefits from renewable portfolio goals.
- Nuclear energy may also benefit as this is a zero-carbon source of electricity. Other environmental concerns, however, make the prospects for nuclear unclear.
- Large energy consumers may face higher costs.

The entire energy sector needs to consider the impacts of climate policies on their future. Effective carbon management strategies that are integrated with broader corporate planning strategies will become important in investment decisions and to hedge against the uncertainties remaining in climate policies.