



Water Talk

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Global Warming and Water Treatment

192 nations are meeting in Copenhagen at the United Nations Climate Change Conference on December 7-18, 2009. This conference is the most significant attempt at changing the course of global warming since the 1997 Kyoto Protocol. The protocol involved 37 industrialized nations who agreed to cut the emissions of 6 greenhouse gases by 5.2% from 1990 levels. The protocol was never ratified by the United States and expires in 2012.

The road to Copenhagen began in 1992 when the U.S. signed on to the United Nations Framework Convention on Climate Change, agreeing to keep global warming effects below “dangerous levels.” These focus of these meetings are to come up with a replacement for the Kyoto Protocol.

In spite of the fact that there may be various controversies surrounding global warming, including whether it is manmade or a natural phenomenon in the Universe, all the major nations in the world are going ahead with plans of reducing

greenhouse gas emissions. Legislations will be passed in the United States and internationally which will have a significant impact on our economy. It will also increase the impact of the green movement on all commercial and industrial uses of water treatment. The enforcement of this legislation may be lengthy and costly. The additional cost could slow the recovery from the global recession. It could also temporarily increase unemployment.

Many believe that the Copenhagen sessions will be a successful replacement for the Kyoto Protocol because technologies that cut back carbon dioxide emissions from factories and vehicles that feed the Global economy adds cost to fuel, food, etc; this does not appeal to industrial nations struggling with the global economic meltdown or developing nations that are trying to ramp up their economic growth.

What would a good plan look like?

The United Nations' de Boer says it would hold:

- Greenhouse-gas emission goals for industrialized nations. The primary greenhouse gas is carbon dioxide, but there is also: water vapor, carbon dioxide, methane, nitrous oxide, and ozone. Greenhouse gases are gases in an atmosphere that absorb and emit radiation within the thermal infrared range. This process is the fundamental cause of the greenhouse effect.
- Emission-free energy goals for developing nations
- Promises of money and machinery from industrialized nations to meet those goals
- Agreement on how to meet those goals and commitments.

The energy bills will favor a reduction in the use of fossil fuels like oil, gas and coal. They will promote investment in alternate energy sources like solar, wind, and ocean power. Electrical costs directly relate to greenhouse gas emissions, and although there has been an increase in solar and wind power, these forms of energy will, at best, produce a minimum offset to overall energy use.

The vast majority of energy demand will rely on fossil fuels. Nuclear power certainly reduces greenhouse gases. However, there is a lot of controversy surrounding what is done with the nuclear waste. Also, nuclear plants require a lot of time input in order to get them up and running, therefore it will take quite some time for the benefits of these types of facilities to be seen having a direct impact on greenhouse gas emissions and global warming.

The clean energy bill will probably not pass this year. The bills all center on the creation of a national cap-and-trade system, where rights to emit greenhouse gases are capped; they can be sold and traded among industries. The IPCC estimated that if emissions were cut by the de Boer recommended 80%, the global economy would be reduced by 3%. Jae Edmonds of the Joint Global Change Research Institute at the University of Maryland stated, "As soon as we put a price on carbon, the increased price will pass all the way down to consumers. When I consider my home heating-oil bill, my natural-gas bill in the winter, the prices will drive decisions."

Poor nations will barrel down the fossil fuel path to industrialization without a global treaty that gives them a reason to invest in low-emission power. A

2006 British government report estimated that addressing climate change through efficiency, low-emission technologies and a cap-and-trade system for greenhouse gases would subtract about 1% from global Gross Domestic Product in 2050, as opposed to a roughly 5-20% cost to global GDP if nothing were done. Mendelsohn says “People seeking such a stringent policy that ensures global warming will not be harmful will demand such an expensive strategy that no one will agree to do anything. A more moderate policy that will eventually lead to substantial reductions of greenhouse gases, it is very likely one could get global agreement in Copenhagen.”

WHAT ABOUT ENERGY?

In 2005, the Energy Policy Act was established to provide new tax incentives through the *Commercial Building Tax Deduction* for any expense that may be capitalized by a building owner who makes their building energy efficient according to a list of requirements. The minimum deduction is \$1.80 per square foot of the property. Additional deductions are available for improvements in interior lighting, HVAC and hot water systems, and building envelope systems. In order to receive the deduction, an inspection must be performed and must meet the guidelines of the National Renewable Engineering Laboratory.

We are rapidly changing in our attitudes towards the environment. The Green initiatives taken by most countries in the world are aimed at improving air and water quality, reduction of pollution and to conservation of resources. These changes are encouraged through economic and political incentives provided to businesses that take Green Initiatives. Water treatment business should develop a green initiative program geared at providing customers with the tools they need to approach the market with service and product offerings that correspond with green concepts.

WHAT DOES IT MEAN FOR US?

Higher air temperatures will increase evaporation from oceans, as well as increasing the evaporation of water from land. Rainfall patterns will begin to change, which means that dry areas will get drier and wet areas will get wetter. Global warming is a big concern for Africa and Canada because of less snow, less rain, warmer temperatures and higher winds that increase evaporation.

Water and wastewater professionals need to be aware of the environmental impact of global warming. If the water supply is threatened, or reduced in volume, the quality of the water supply becomes a critical issue.

Wastewater treatment systems directly impact the ability to maintain water quality by preventing pollution of aquifers, allowing water to be recycled thereby reducing or eliminating waste. Currently, much of the potable water supply of the country is dependent on management of onsite sewage treatment and disposal systems.

Increasing the market penetration of water recycling technologies is a smart business move for water treatment companies due to the increase in water shortages throughout the world. Water shortages can cause an increase in desalination plants in order to use ocean water for use.

The extreme droughts of the western states in conjunction with the California Green Movement and its innovative approach to regulatory issues has affected the way that the water treatment industry is handling business policies and procedures in regards to water conservation within the cooling towers and boilers. Switching to more sustainable development paths such as water conservation, can make a major contribution to climate change mitigation.

Cooling and heating provide opportunities for water conservation because cooling towers, chillers, small evaporative coolers, boilers and steam generators are all typically being used inefficiently. A large portion of overall water consumption is used for

cooling and heating (averages 28% for offices and 20% for manufacturing processes). If this heating and cooling water consumption is combined with the water used in hospitals, hotels and motels, and schools, it is quite obvious how much water is consumed for just this one process. *Water efficiency programs can reduce costs and increase the profitability of a business.*

There is a major opportunity for all water treatment companies to partnership with your customers to take Green Initiatives directed towards water reuse and energy savings. It is also a good selling tool to distinguish you from your competitors.

The Green Initiatives are to use the BACT to keep heat exchanger surfaces clean thereby conserving energy, resulting in a reduction in greenhouse gas emissions. There are many opportunities to reduce the amount of energy loss from boiler systems such as: boiler bleed, recovering heat from combustion emissions, and capturing this energy to reduce overall energy use in the facility. Condensate can be captured and recycled to reduce the amount of energy used. Also, economizers installed to reclaim energy that would be otherwise discharged. All of these things can be used to reduce the amount of energy required to run the plant, thereby reducing the greenhouse gas emissions of the plant.

Other indirect methods of energy conservation relate to recycling of water and reducing water requirements, since transporting water involves a high usage of energy in order to pump or transport the water. The movement of water from area to another is energy intensive, which is commonly done in the Southwest and other areas that don't have enough natural water for the population. One example is the water used from the Delta and the Colorado River to Southern California and other areas. By reducing water needs and the use of water reclamation, greenhouse gas emissions are indirectly reduced because less energy is required.

It is even more important today to be talking to our customers and prospects about green initiatives. The legislation that will follow the Copenhagen meetings will put added pressure on our customers and all facilities to reduce greenhouse gas emissions through energy and water conservation.

The LEED program, Leadership in Energy and Environmental Design, was established by the U.S. Green Building Council (USGBC) and is focused on the commercial/institutional segment of the marketplace. However, the industrial market is taking major green initiatives including reduce energy and water use and the utilization of recycled materials. This reduces costs making them more competitive and increases profits. All industrial companies, including the Fortune 500, have taken major green initiatives.

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