PikeResearch
Cleantech Market Intelligence

Research Report

EXECUTIVE SUMMARY:
Carbon Management Software and Services
Business Drivers, Policy Issues, Enterprise Adoption Patterns, Competitive Landscape, and Market Forecasts

NOTE: This document is a free excerpt of a larger research report. If you are interested in purchasing the full report, please contact Pike Research at sales@pikeresearch.com.

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Section 1

EXECUTIVE SUMMARY

1.1 Introduction to the Carbon Management Market

Enterprise carbon management is now being adopted and implemented all over the world, though at different levels of robustness and scope. Most advanced economies have set carbon emissions targets for their industries and government agencies. Meanwhile, developing nations in Asia Pacific, Latin America, Eastern Europe, the Middle East, and Africa are coming onboard, some faster than others depending on governmental policies.

This is a nascent and very dynamic market in which both vendors and end users must adapt to continuously changing and unpredictable circumstances caused by the ever-shifting political, regulatory, and economic conditions. Much can happen during the timeframe that this report covers. Nevertheless, carbon management is and will continue to be on top-of-mind among executives and government agencies around the world for many years. The question here is: Why has carbon management become such a critical issue?

It is now widely recognized by the scientific community – though there continues to be some controversy – that greenhouse gas (GHG) emissions, mainly attributed to CO_2, are increasingly being released into the atmosphere, thus causing climate change and intensifying global warming. Since the industrial revolution in the mid-1700s, CO_2 emissions have risen by about 36%. However, the sharpest increases have taken place since 2000 – at more than 3% per year, compared to 1.3% during the 1990s.

Climate change is a very complex national and international issue that affects practically every company, government agency, industry sector, and country. Global warming is considered a serious problem because it impacts weather patterns, thereby causing severe flooding and draught in many parts of the world. It is also viewed by most scientists to be a major reason for the increasing frequency of severe storms like hurricanes and tornados that have occurred in the United States and elsewhere during the last few years. Some governments even believe that global warming is a national security issue.

The considerable attention to global warming has thus laid the groundwork for an emerging carbon management market. Today, it is a relatively small and nascent market that Pike Research estimates reached about $209 million worldwide in 2008 in terms of spending for software and external services. But it is fast-growing market. Between 2008 and 2009, Pike Research believes the carbon management market has grown by nearly 84% globally, representing a total market of $384 million.

1.2 Market Opportunities

North America will provide one of the most promising market opportunities in the years ahead. Although the region has lagged behind Western Europe, which embraced climate change legislation years ago, it is now trying to catch up with new carbon emissions regulations. Despite the lack of government mandates, much of corporate America has already been making preparations for the day when they would have to curb their greenhouse gases. Pike Research forecasts that North America will grow to a market size of about $228.5 million in 2010, experiencing a growth rate of over 75% between 2009 and 2010. The 2008-2017 compound annual growth rate (CAGR) for the region will be more than 44%, which is somewhat above the total worldwide growth rate.

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In Western Europe, Pike Research believes that spending for carbon management software and services will reach $297 million in 2010 and experience a 9-year CAGR of almost 37%. But demand for carbon management in the Western Europe market begins to lose ground to that in North America during 2013. At that time, the latter will become the leading marketplace globally, a position it keeps through 2017.

Asia Pacific will represent the third-largest carbon management market at $83 million in 2010, and it is expected to grow at almost the same rate as Western Europe. In 2017, Asia Pacific will represent a fairly large market of $457 million, accounting for more than 10% of carbon management spending worldwide.

1.3 Market Forces

There are many factors contributing to these robust growth rates, but the increasingly tough regulatory environment with respect to GHG emissions has so far had the most significant impact. During the last couple of years, demand for carbon management has largely been driven by a slew of different regulations requiring organizations to reduce their carbon footprint. The Kyoto Protocol,[1] which established the first international constraints on carbon emissions in 1997 and came into legal force in 2005, may have had the most widespread regulatory effect on organizations around the world. It requires thirty-seven industrialized nations to reduce their emissions by an average of 5% below their 1990 carbon levels during the period of 2008 to 2012, when the protocol's emissions reduction targets expire. The main objective of the Copenhagen Summit in December 2009 was to replace this protocol with a new and perhaps more stringent one; however, due to numerous political obstacles, this did not happen as many had hoped.

Regardless of what happened in Copenhagen, the low-carbon momentum has already begun to take root around the world. Many legislative acts are currently in force to promote the reduction of GHG emissions. This is especially true in Western Europe, where the EU initiated a Renewable Energy Directive and the Emission Trading System (EU ETS). The United Kingdom introduced the Climate Change Levy in 2001 and the Carbon Reduction Commitment (CRC) in 2007, and the Climate Change Act became law in 2008. Other countries in Europe that have taken legislative action include France and Ireland.

Various piece of legislation are either being proposed or have been enacted in North America, albeit a bit later than in Western Europe. Canada is committed to achieving reductions in GHG emissions of between 45% and 65% from 2003 levels by 2050. The United States made significant progress in September 2009, when the EPA issued a mandate for GHG reporting in 2010 that will affect about 10,000 facilities in the country. A month later, President Barack Obama issued an executive order (EO) requiring federal agencies to address environmental issues with respect to energy, carbon, water, and waste.

Similar legislation has been passed in other parts of the world, such as Japan, Australia, New Zealand, Hong Kong, South Korea, and South Africa. China is the biggest GHG emitter, accounting for roughly 22% of all global emissions. However, the country has not yet enacted any legislation to combat global warming, though there are some hopeful

[1] The Kyoto Protocol is an international agreement forged in Kyoto, Japan in December 1997. It seeks to limit worldwide GHGs to slow the progress of global warming. This protocol was leveraged in 2005 after the Russian Duma ratified it in 2004 due to pressure from the European Union. In return, the EU supported Russia's admission into the World Trade Organization. As of October 2009, 184 countries, accounting for almost 64% of emissions in 1990, had ratified the agreement.

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signs. Recently, the president of China, Hu Jintao, and President Obama agreed that the two countries will partner to pursue solutions to climate change.

In addition to the influence of legislation on demand for carbon management software and services, large global suppliers and manufacturers, such as Wal-Mart, are starting to enforce supply chain mandates on their own suppliers. The goal of such mandates is to reduce costs and increase profits while also improving the carbon footprint of their products and services. In 2009, Wal-Mart asked its 100,000 suppliers around the world to evaluate and label each product in terms of its "sustainability," including its carbon footprint.

Other market forces are becoming more and more influential. Brand equity as it relates to carbon footprint is becoming a major issue. Corporations increasingly have to address concerns among their shareholders, as well as customers or consumers, about running a "sustainable" business with a low-carbon output. The desire to reduce energy consumption to achieve cost savings is yet another important motivating factor to adopt carbon management software tools or seek assistance from a services vendor. In addition, organizations will soon be faced with the major challenge of measuring, monitoring, and reporting on the increasing volume of carbon emissions data required by regulations and/or supply chain mandates. The growing adoption of cap-and-trade schemes will also result in a huge amount of transaction data to be managed, especially by financial services firms. This will require a sophisticated and comprehensive carbon management approach.

Practically every industry sector is and will be affected in varying degrees by these various market forces. However, the energy, manufacturing, and government sectors have been experiencing and will continue to experience the most pressure, especially from a regulatory, supply chain, and cost efficiency standpoint.

1.4 Software and Services Markets

Organizations will need software tools and help from services providers to address their carbon footprint challenges. Both the software and services markets related to carbon management will be strong and vibrant. Pike Research forecasts that the software market will reach $132 million in 2009 and grow to over $1.2 billion in 2017 at a CAGR of more than 37%. The services market, which primarily includes consulting, implementation, and outsourcing services, will be somewhat larger at $248 million in 2009. It will grow to over $3 billion in 2017 at a CAGR of 41.5%.

1.5 Competitive Landscape

Today, the vendor landscape is very fragmented. Young startups such as Hara are competing against the many established and mature niche firms (e.g., PE International and IHS) and large software or services companies (e.g., SAP, IBM, CA, SAS, Symantec, Deloitte, PwC, and Accenture). Competition is also emerging from corporations themselves, as a few of them have decided to provide their homegrown tools for free or at low cost to their customers.

What do these vendors need to pay special attention to in the coming years to enhance their competitive advantage? First, both software and services vendors must make sure they can offer a holistic and comprehensive supply chain approach that addresses the entire supply chain from production through distribution. Second, it is critical to be able to align solutions or services offerings to the customer's business goals and demonstrate a tangible business outcome from any implementation. Third, vendors must show that they "practice what they preach" because customers care about vendors' own carbon reduction philosophy and practices. In this fragmented market, vendors also must clearly articulate

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their differentiating characteristics to distinguish themselves from the pack.

1.6 Enterprise Perspective

With respect to the enterprises, the main issue is to focus on adopting a carbon management strategy for the entire organization, have a clear communications and training plan, and get ready for the possibility of having to undergo a major organizational change. Looking ahead, the challenges are many. However, companies can still meet three important objectives – people, profit, and the planet – by implementing a carbon management program.

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Section 9

SCOPE OF STUDY

This report examines the carbon management software and services markets from a global perspective, presenting a 10-year forecast from 2008 through 2017. The study aims to identify and discuss the impact of recent market trends on carbon management software and services opportunities.

Pike Research presents a worldwide 10-year market sizing and forecast for five major regions:

- North America
- Western Europe
- CEMA
- Asia Pacific
- Latin America

In addition to a total view of the carbon management market, Pike Research provides separate market sizing and forecasts for the software and services markets. We also present global market sizing and a 10-year forecast for five discrete service engagement types with a focus on the following service offerings:

- Consulting
- Implementation
- Outsourcing
- Training and software support

Pike Research looks at the entire carbon management services market, including services that are provided as "standalone" (discrete or carbon management-specific services) offerings and those that are embedded in other types of service offerings. Note that some services vendors primarily offer carbon management-related services as part of another services engagement, such as in a supply chain management or strategy consulting project.

Pike Research also provides a market sizing and 10-year forecast segmentation of the carbon management market by ten different industry sectors.

In addition, this study looks at the carbon management software and services competitive landscape to identify and analyze the key players in this market. Pike Research interviewed a mix of sixteen software and services vendors, presenting a profile and SWOT analysis of each company.

The report also aims to obtain insights into the demand side of the carbon management market. Pike Research interviewed a sample of five companies that have taken steps to implement a sustainability program that includes carbon management. Representing different industries, these companies are major enterprises in their own sectors.

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Data Collection

The forecasts provided in this study represent Pike Research's best estimates and projections for 2009-2018, where the base year is 2008. It is based on primary and secondary information obtained in October and November 2009. Interviews were conducted with sixteen software and services vendors during these months. In addition, Pike Research spoke with five end users from the demand side of the market to learn about their carbon management initiatives, challenges, plans, and needs.

Secondary research information was collected from a wide range of sources, such as the *Environmental Leader*, Energy Information Association, Environmental Protection Agency, Carbon Trust, *Monthly Energy Review*, The World Bank, GlobeScan and SustainAbility surveys, and numerous press releases from vendors and end users.

Defining the Market

Carbon Trust provides the following definitions:

Enterprise carbon management refers to an activity within an organization that measures, monitors and manages its carbon footprint for the purpose of achieving sustainable consumption and production.

Carbon refers to carbon dioxide (CO_2) or greenhouse gas that is the major contributor to global warming. Because other greenhouse gases (GHG), such as methane and laughing gas, are typically converted to CO_2 equivalent, they are considered as part of GHG. Carbon can be linked to almost all the activities that take place within an organization, e.g. in the supply chain, processing and manufacturing, packaging and distribution, offices and employee work habits, data and call centers, waste disposal, and executive or employee travels. Carbon is pervasive wherever goods and services are produced and delivered.

Carbon footprint is the total amount of carbon dioxide (CO_2) and other greenhouse gas (GHG) emissions, caused by an individual or organization, event or product along its entire supply chain, including the product's end-of-life recovery and disposal. GHG emissions are, for example, caused by electricity production in power plants, heating with fossil fuels, transport operations, and other industrial and agricultural processes.[35]

Note that when speaking about carbon management, Pike Research frequently mentions carbon reduction in the same context. Carbon reduction is an important component of carbon management, as it is often the intended outcome of measuring, monitoring, and managing an organization's carbon footprint.

[35] "Carbon Trust Aims to Spark 'Low Carbon Industrial Revolution' with Multimillion Pound Investment," Carbon Trust, November 2, 2009.

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SOURCES AND METHODOLOGY

Pike Research's industry analysts utilize a variety of research sources in preparing Research Reports. The key component of Pike Research's analysis is primary research gained from phone and in-person interviews with industry leaders, including executives, engineers, and marketing professionals. Analysts are diligent in ensuring that they speak with representatives from every part of the value chain, including but not limited to technology companies, utilities and other services providers, industry associations, government agencies, and the investment community.

Additional analysis includes secondary research conducted by Pike Research's analysts and the firm's staff of research assistants. Where applicable, all secondary research sources are appropriately cited within this report.

These primary and secondary research sources, combined with the analyst's industry expertise, are synthesized into the qualitative and quantitative analysis presented in Pike Research's reports. Great care is taken in making sure that all analysis is well-supported by facts, but where the facts are unknown and assumptions must be made, analysts document their assumptions and are prepared to explain their methodology, both within the body of a report and in direct conversations with clients.

Pike Research is an independent market research firm whose goal is to present an objective, unbiased view of market opportunities within its coverage areas. The firm is not beholden to any special interests and is thus able to offer clear, actionable advice to help clients succeed in the industry, unfettered by technology hype, political agendas, or emotional factors that are inherent in cleantech markets.

NOTES

CAGR refers to compound average annual growth rate, using the formula:

CAGR = (End Year Value ÷ Start Year Value) ^ (1/steps) – 1.

CAGRs presented in the tables are for the entire timeframe in the title. Where data for fewer years are given, the CAGR is for the range presented. Where relevant, CAGRs for shorter timeframes may be given as well.

Figures are based on the best estimates available at the time of calculation. Annual revenues, shipments, and sales are based on end-of-year figures unless otherwise noted. All values are expressed in year 2009 U.S. dollars unless otherwise noted. Percentages may not add up to 100 due to rounding.

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