

Chemistry Shapes the Future

Sustainable Development of the Chinese Chemical Industry



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China's 2060 carbon-neutrality goal has established long-term emission reduction targets for all industries in China. As a significant energy consumer, it is essential for the chemical industry to set its own targets. The Association of International Chemical Manufacturers (AICM), founded in 1988, represents nearly 70 major multinational companies in the chemical industry of China. CHEManager asked Jeff Zhu, President of Performance Additives and the Asia Pacific region at Cabot, and AICM's Chairman, to discuss the industry's role in helping achieve China's carbon-neutrality goal.

CHEManager: Mr. Zhu, what exactly is AICM's purpose and what is the scope of its activities?

Jeff Zhu: AICM aims to contribute to the development of a harmonious society and the sustainable growth of China's chemical industry. As the representation of the leading international chemical players in China, AICM commits to promote Responsible Care and other globally recognized chemical management principles among all stakeholders; advocate cost-effective, science- and risk-based policies to policy makers; and build up the contributive role of the chemical industry to the economy.

AICM achieves these goals via the activities of its four committees: the

Responsible Care Committee, the Industry Policy Advocacy Committee, the Public Relations and Communication Committee, and the Government and Industry Affairs Committee.

Which local organizations and authorities do you cooperate with to realize this shared vision?

J. Zhu: Through its history, AICM has enhanced its reputation and effectiveness by partnering with many local organizations and authorities, such as governments, safety and health management authorities, quality inspection and quarantine administrations, technical institutes, indus-

trial associations, industrial/chemical parks, academia; and media agencies.

Is it difficult to establish or develop Responsible Care principles in China?

J. Zhu: Nationwide, the Chinese government and organizations have made great efforts to improve sustainability and carbon neutrality. During the 13th Five-Year Plan period, the promotion of Responsible Care has made positive progress, and AICM could establish the promotion mechanism for enterprises to practice responsibility subjects.

For example, the RC Committee and its nine working groups have been established and started their regular activities. In addition, the establishment of the "1+6+X" RC standard system has made steady progress in basic work such as online education and our training platform for responsible care.

The 14th 5-Year-Plan also raises the awareness of sustainability of chemical companies and society: It is planned to adjust the energy structure and to accelerate R&D and the promotion of low-carbon technologies to reach carbon neutrality. In addition, the plan includes measures to remediate plastic pollution.



Jeff Zhu, Chairman, AICM

Our challenge in promoting the RC principles in China is mainly to get more and more local chemical companies to participate in this voluntary initiative so that they can embrace these principles, realize their values and benefit from their implementation, like other successful chemical giants in the world. AICM encourages chemical manufacturers to produce their products in a way that protects the environment as well as human health and conserves resources in China.



What is the public image of the chemical industry in China like?

J. Zhu: When chemicals are mentioned, many people first think of explosions, emissions or accidents. But in fact, people cannot live without chemicals. Our lives are so full of chemicals that we cannot ignore them. Therefore, we are trying to improve the public image of the chemical industry.

In times of climate change and resource scarcity, society is becoming aware of the importance of sustainable development, and the chemical industry is the foundation and key to solve the world's most pressing sustainability problems.

However, we are aware that the implementation of RC in China remains a major challenge. There are several reasons for this. There are probably about 300,000 chemical companies in China, and their locations, size, technological capabilities and understanding of RC vary widely. It is difficult to bring them all to the same level of RC.

In a surprise announcement at the COP26 climate summit in Glasgow, China and the US have agreed to boost climate co-operation over the next decade. The Paris Agreement that is binding 196 countries to combat climate change, called countries to submit their nationally determined contributions, or NDCs, to reduce greenhouse gas emissions. Which are China's NDCs?

J. Zhu: China's NDCs do foresee a short-term increase in CO₂ emissions but expects its emissions to decline before 2030. By 2030, China's carbon dioxide emissions per unit of GDP are targeted to fall by more than 65% compared to 2005 levels. Non-fossil energy is targeted to account for about 25% of primary energy consumption. Forest resources are expected to increase by 6 billion cubic meters compared to 2005, and the total installed capacity of wind and solar energy is to reach more than 1.2 billion kilowatts. By 2060, the country aims to achieve carbon neutrality.

To realize its goals of peaking carbon dioxide emissions before 2030 and going carbon neutral before 2060, China will soon release implementation plans of a policy system dubbed „1+N“ for peaking carbon dioxide emissions in key areas and sectors. In addition, the launch of a nationwide carbon trading system and the stop of high energy consumption projects are planned.

What challenges do you suspect for the chemical industry with these plans and policies?

J. Zhu: There are two challenges facing the chemical industry as part of this national alignment. Firstly, the road-map is taking shape, but it is still not clear if these solutions are sufficient, economically viable or available in the supply chain. Secondly, the chemical industry is an initiator of downstream carbon reduction, something regulators are unwilling to understand.

Which steps is the chemical industry taking to support China's goal of carbon neutrality?

J. Zhu: 17 petroleum and chemical enterprises, chemical parks and the China Petroleum and Chemical Industry Federation (CPCIF) signed the Declaration on the Carbon Peak and Carbon Neutrality in Chinese Petroleum and Chemical Industry in January 2021, claiming to realize environment protection and carbon emission reduction during the development of the chemical industry.

Six actions were proposed to reach carbon emission targets, including energy structure adjustment, energy efficiency improvement, product qualification optimization, carbon capture and storage technology, R&D investment, and carbon reduction investment.

What are the most common strategies and practices of AICM members to reduce their CO₂ emissions?

J. Zhu: Based on the information gathered from a survey among AICM members and their sustainability reports, we found that the respondents have integrated their carbon-neutral targets into business development strategies. From technical innovation to progress in improvement, they have adopted a broad spectrum of strategies towards carbon reduction. These strategies fall into four main categories: renewable energy, process improvement, carbon friendly products, and carbon offset methods. According to our survey, some of our members are expected to achieve carbon neutrality by 2050.

The transition to carbon-neutrality may involve high costs. How can smaller companies, in particular, be supported in replacing fossil energy or raw material sources with more sustainable alternatives?

J. Zhu: Smaller companies normally also have smaller carbon footprints and simpler product lines, which make them easier to adjust. So, it is not about the size—every company should and will find their contribution in the common goal.

With the development of the global carbon labeling system, companies can use carbon labels to help achieve high returns and meet carbon emission requirements.

The carbon trading market can accelerate the reorganization of companies and increase the economic value of carbon-neutrality.

The Chinese government may formulate legislation for standard mechanisms in the coming year to help promote new technologies. As the scope and scale of use expands, the cost of some low-carbon, zero-carbon, and carbon-negative technologies will rapidly decline, opening up new opportunities for small businesses.

The government may also enact laws that come with bans and sanctions for companies that do not comply. Is AICM in a position to provide advice or counsel policymakers in China on such aspects of industry policy?

J. Zhu: AICM strongly support the realization of China's goals of peaking carbon dioxide emissions before 2030 and going carbon neutral before 2060. But it is true that China often conducts „campaigns“ to implement its policies, which is not a scientific approach. I believe that most companies operating in China have already experienced this, and they all have some contingency plans in place. Our main role at AICM is to constantly communicate to policy makers that „campaigns“ do not achieve sustainable results and even have a negative impact on companies that embrace the path of sustainable development. I think that pol-

icy makers are beginning to understand this point.

We have observed that China is developing more supporting policies and encourages more companies and industries to invest in low-carbon technologies. With the support from the government, and by leveraging its policies, AICM will continue encouraging its member companies to set their goals and strategies to help reach a carbon-neutral future.

Looking ahead, how do you think the chemical industry in China will develop?

J. Zhu: AICM believes that in the future, the chemical industry in China will use more technical approaches to improve the manufacturing process in order to save energy and enhance energy efficiency, thereby reducing carbon emissions.

Transitions are always associated with challenges. AICM is aware that the chemical industry is still mainly dependent on fossil fuels and that the transition to cleaner fuels can be associated with high costs. Thus, it is not easy for smaller companies to shift to a different energy structure or adopt new technologies. However, we believe that further improvements in technologies and political support can lower the cost of a low-carbon future for companies in the sector.


The efforts made by member companies of AICM are the first step toward a low-carbon future. We believe that technical and political support will create opportunities to improve the low-carbon strategies in the chemical industry. More and more AICM member companies will overcome the existing challenges and together create a carbon-neutral future.

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