



ESG opportunities in Chemical Industry as a key to success

Topic of the month April 2014

Introduction

Many of us do not realize the importance of the chemical industry and the impact it has on our everyday lives. From the clothes we wear to the food we eat to the products we use, chemicals are everywhere enabling us to lead more productive and more comfortable lives.

Historically, the industry has long suffered from poor reputation due to its adverse effects on environment, health and safety. However, over the past three decades the chemical industry has made impressive gains in the ESG area by committing to continuously improve its ESG performance. Chemical companies now realize resource efficiency is not only good for the planet but it also reduces costs and improves profitability. Increasingly, chemical companies look at the whole value chain and think about ways to help their customers improve their environmental footprint as well. The industry can benefit from mega-trends such as the growing population, climate change and resource depletion, where innovation is a key to success. In this article we will outline the most important ESG aspects related to the chemical industry and how the companies in this industry can even benefit from major global challenges.

‘As a key contributor to sustainable development, the chemical industry needs to continue to participate in the societal debate on how to transform the sector in meeting the needs of over 9 billion people in 2050. A tall order, but one the European chemical industry can live up to.’

Björn Stigson, President (1995-end 2011), World Business Council for Sustainable Development (WBCSD)

Overview chemical industry

The chemical industry converts raw materials such as oil, coal, gas, air, water and minerals into a wide range of (semi) finished products for own industry, other industries and consumers. Chemical companies produce coatings, paints, pharmaceutical ingredients, fertilizers, enzymes, fragrances, flavoring and all kinds of plastics. More than 90% of all manufactured goods are directly linked to the chemical industry. Studies forecast that global chemical sales will grow about 3% per year to 2050. The main driver is strong demand for food and consumer goods in emerging countries, as well as increasing demand for complex chemicals in developed countries. Chemical production has historically taken place in Western Europe, North America and Japan. However, in recent decades we have seen a major shift of production and sales to emerging markets.

There are several reasons for this shift: slow demand growth in Europe, high demand growth in Asia (especially China), relatively high production costs in Europe (labour, feedstock and energy costs) and stricter regulatory framework in Europe. Due to these factors, the European chemical industry is moving away from bulk petrochemicals towards high-



er added-value products and services and significantly improved ESG performance. Innovation plays a key role in this context, which is directly linked to ESG factors. PwC has recently conducted a global CEO survey. A key finding from this survey in the Chemical industry was the following:

- *The majority of chemicals CEOs want to improve their company’s ability to innovate as they expect technological advances, climate change and resource scarcity to dramatically change their business environment over the next five years.*

Main ESG issues in the chemicals industry

So what does this mean in practice for the operations in the industry. ESG concerns and evolving stakeholder expectations are having a greater impact on the business environment than ever before. As explained earlier chemical companies are well aware of this and many of them have shifted from managing reputational risks related to ESG aspects to seizing business opportunities in this area. Nevertheless, there are still many ESG risks that require special attention.

The most important ESG factors related to the chemicals industry are:

Environmental	Social	Governance
Environmental pollution	Health and safety	Independence of directors
Hazardous waste	Products quality and safety	Remuneration
Raw material consumption	Human capital development	Regulatory requirements
GHG emissions	Products used in agriculture and healthcare	
Recycling	Community relations	
Eco-efficient products	Anti-competitive practices	

Figure 1, ESG Factors in Chemical Industry (Source: ING IM)

High profile accidents such as those at Flixborough (UK) in 1974, Seveso (Italy) in 1976, Bhopal (India) in 1984 and Toulouse (France) in 2001 have contributed to societal unease about the safety of the industry as a whole. Though no major accidents have happened over the past few years in the developed market countries, emerging market countries have experienced many accidents, most of which have not reached the news. This is of particular concern as people in these countries are at greater risk of exposure to hazardous chemicals and waste.

While not all chemicals are hazardous, exposure to some chemicals can cause serious human health and/or environmental damage. Concern is greatest over chemicals which are toxic, highly persistent, long-range, and which bioaccumulate in wildlife and humans. Early human life stages, especially the embryonic, foetal and infant stages, are known to be particularly sensitive to chemicals. Toxic exposure at these stages can lead to disease and disability throughout a lifespan, including reproductive effects. Also important to note is that the chemical industry has one of the highest rates of occupational diseases such as asthma, dermatitis and cancer.

Chemicals are highly regulated because of the potential harmful effects certain substances can have on human health and the environment. International treaties and conventions have tried to regulate and eliminate the production and use of the most harmful chemicals. Recent years have seen significant changes in national chemicals management programmes, both in OECD and non-OECD countries, though enforcement needs to be strengthened.



In Europe, REACH (2007) regulates the Registration, Evaluation and Authorisation of Chemical substances. This regulation requires manufacturers and importers of chemicals to collect information on the safety of the chemicals they sell. It also seeks the substitution of the most dangerous chemicals. In the United States, the Obama Administration announced Essential Principles for Reform of Chemicals Management Legislation in September 2009. Canada, Japan and China have also introduced initiatives in this area. An increased number of activities are undertaken to help non-OECD countries establish and improve their chemicals management systems and to introduce them to the principles and tools used in OECD countries. For example, the UNTAR's (United Nations Institute for Training and Research) Global Capacity Building Programme plays a significant role in the safe management of chemicals in non-OECD countries, by providing institutional, technical, and legal support to governments and stakeholders to develop sustainable capacity for managing dangerous chemicals and wastes.

Also, non-regulatory approaches such as “green procurement” in the public sector can have positive impact. The government is a significant purchaser of goods and services and in this way can provide incentives to the chemical industry to develop more environmentally friendly products.

Providing solutions

The OECD defines sustainable chemistry as: “the design, manufacture and use of efficient, effective, safe and more environmentally benign chemical products and processes”. This section highlights significant contributions of chemical companies to develop sustainable solutions, such as their role in energy efficiency. In a recent report, the EU Chemical Industry Association stated that the net carbon footprint of the industry developed positively because its upstream emissions were offset by the positive impact from new products contributing to carbon reductions.

Products that contribute to a lower carbon economy and air pollution control

The residential construction market is a major consumer of chemicals (plastics for pipes and siding, but also appliances, carpeting, furniture, and paints which are produced from chemicals). There are a number of different ways to improve the *energy efficiency of buildings* and reduce their carbon footprint. The chemical industry produces some of the world's most used insulation materials such as polyurethane and polystyrene (plastic foams), which are resistant to moisture and air infiltration and have higher thermal resistance than other insulation products.

Enzymes, which are natural catalysts, help break down cellulosic material, used in the production of 2G (second generation) bioethanol. Using 2G bioethanol can, in some cases, reduce emissions by more than 100% when co-products are used to produce heat and power.

Abatement technology manufacturers produce and sell *autocatalysts* that significantly reduce the harmful emissions of four important conventional car exhaust pollutants: carbon monoxide, hydrocarbons, nitrogen oxide and particulate matter. Vehicles powered by hydrogen-based fuel cells are the least polluting vehicle types.

With the help of biotechnology, biomass can be converted into many chemical products. Significant developments include bio-plastics (for e.g. bags) and biofuels. The main benefits are avoiding the use of fossil resources and simplifying the disposal or recycling of products.



Products linked to food production

The *agricultural industry* makes use of many different chemicals. Fertilizers, insecticides, fungicides, and pesticides are all used to protect crops. Many chemical companies have also developed genetically modified (GM) seeds which allow farmers to maintain high yields while using less water and chemical fertilizer. Generally speaking they have the potential (not always backed by scientific evidence) to solve many food and agriculture related issues due to their pest and disease resistance as well as herbicide, cold and drought tolerance. The flip side to this is significant concern among consumers and NGOs over issues such as food safety, the effect on natural ecosystems, gene flow into non-GM crops and loss of biodiversity.



Products used in healthcare

Chemistry is important to a variety of sub-disciplines within the healthcare space. For example, it is used to get a better knowledge of how the body functions and using this knowledge to *improve health and cure diseases*. It can help us gain understanding of the various diseases like cancer, improve care and prevention and detection of deadly diseases. Direct product application is e.g. visible in pharmaceutical and medical gases, used in the diagnosis or treatment of a number of clinical conditions.

How does ING Sustainable Equity play this theme?

New innovations in the Chemical industry can create compelling investment opportunities. When determining our eligible universe within the Chemical industry we select chemical companies which score above the sector average on ESG policies, management systems and transparency and at the same time have no serious ESG controversies. We keep up to date with recent research and NGO reports regarding the Chemical industry. Moreover we frequently discuss ESG topics with the management of chemical companies.



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