



Courtesy: Mckane's Painting

With increasing greenhouse gases playing havoc globally, every country is exploring ways to reduce emissions. The building sector contributes significantly to greenhouse gases. Hence, buildings seem to be one of the weapons against the global warming battle with the potential to abate the problem to a great extent. In this direction, architectural coatings segment has joined the bandwagon of green technology by developing new paints that are environment-friendly and compliant to regulations.

Dr Mosongo Moukwa

In the wake of growing pressures to cut carbon emissions, governments around the world could employ rapid, substantial and relatively cheap

measures to go about it by pursuing energy efficiency in place of more ambitious, but expensive, technological solutions. As the emerging economies continue to grow, they face more pressure on the greenhouse gas front. Both China and India, are developing countries, whose GDP per person is less than one-tenth of America's or Japan's. Yet, they have ample scope to catch up with rich economies by adding to their capital stock, importing foreign technologies and boosting efficiencies.

The scope to cut greenhouse gases

It is estimated that greenhouse gas emissions could be lowered by over one-third by 2030 from 1990 levels (McKinsey Research). Such a reduction is likely to limit global warming to a two-degree centigrade increase above pre-industrial levels. The building sector is a major contributor to greenhouse

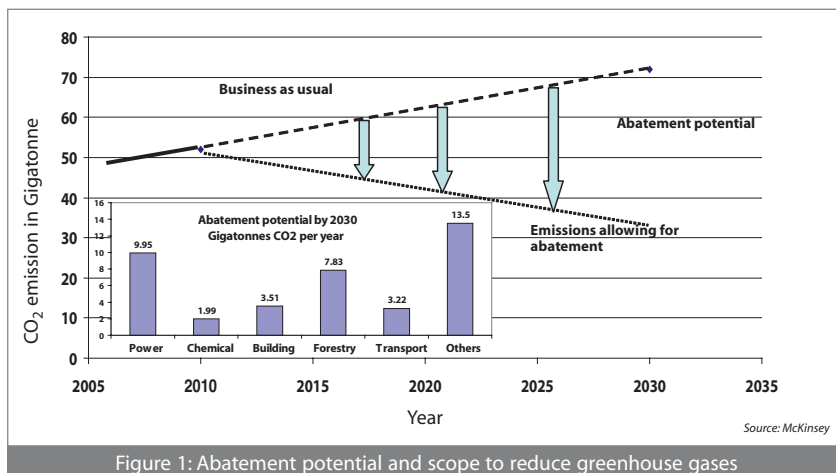


Figure 1: Abatement potential and scope to reduce greenhouse gases

gases. Research indicates that the global abatements potential by 2030 for the various sectors would be as follows in terms of Gigatonne of CO₂ per year: power (9.95), chemicals (1.99), building (3.51), forestry (7.83), and transport (3.22). The expectations with regard to India is that it will abate to 2.68 Gigatonne of CO₂ by 2030. The country is currently emitting 2.16 Gigatonne of CO₂. Figure 1 shows the abatement potential and the scope to reduce greenhouse gases.

Since the building sector is a major contributor to greenhouse gases, there is increasing interest in green building methods and materials. Building owners want to save on construction & post-construction costs and are becoming increasingly aware that once the building is operational, tremendous cost-savings will come in the form of lesser utility bills and maintenance costs. As a result of this changing mindset, the US Green

Building Council (USGBC) estimates an average return on investment of 20 per cent on green buildings. For building owners and occupants, cost is not the only advantage of a green building. Increased health and safety is also a major benefit.

Paint segment going green

Green has become an important concept in the architectural paint market. This sector is expected to grow as emerging economies expand. While Western countries, such as the US, consume about 25.8 kg of paint per capita, India consumes only 1.25 kg against 51.7 kg in Qatar and 38 kg in Singapore. Architectural coatings in India, for example, represent 50 per cent of all the paints consumed compared to a 30 per cent in the US.

Green buildings allow for the reduction of the building's environmental footprint on the planet. For example, US homes account for 21

per cent of carbon dioxide emissions, 22 per cent of energy use, and 74 per cent of potable water consumption, and therefore, are a huge contributor of emissions that are harmful to the earth. The reduction of natural resources consumption needed to operate the building, as well as the lesser amount of pollution that the building is causing, are also important aspects in sustainability. Green building can help mitigate the causes of climate change by reducing emissions, energy and water consumption. This represents a 'low-hanging fruit' that can be taken advantage of in emerging countries like India.

A wide range of green paints

For commercial painting contractors, the demand for greener buildings translates into the demand for greener paints and coatings. This raises the need for paint and coating products that help create an environmentally-

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safe surrounding, in addition to beauty and protection.

In response to the growing demand for environmentally-safe building products, paint manufacturers have been redesigning their existing paint formulations and developing new paints that are eco-friendly and compliant to regulations. Raw materials suppliers have joined the bandwagon to help advance the 'green' paint technology.

One trend to be noted here is the shift from solvent-based paints to water-based paints, which are being reformulated to remove toxic solvents in the manufacturing process. Water-based paints release zero volatile organic compounds (VOCs) and hazardous compounds to the environment. Another progress in paint technology is the class of water-repellent exterior coatings that prevent dirt particles from adhering to the painted surface, making cleaning and recoating projects easier & more economical.

Raw material suppliers have contributed to the green initiative by enhancing the properties of emulsion polymers to allow for the production of low-VOC, low-odour and alkyl phenol ethoxylates or APE-free paints. They have also allowed for the development of ultra-violet resistant paints without the need for harmful coalescent agents. Another breakthrough has been in the development of radiation curable coatings that speed up paint application time and reduce wastage, thereby lessening serious health risks

to commercial painting contractors. Yet another trend is the development of infra-red reflective pigments that reduce heat transfer in surfaces, resulting in reduction of heating and cooling costs.

The paint industry uses approximately 3 million tonne per year of titanium dioxide (TiO₂), because of its ability to create opacity. It now costs about \$ 3.20/kg, and its carbon footprint is reflected in the price. There are alternative approaches where the emulsion itself allows for a reduction of TiO₂. The urge for cheaper and more environment-friendly products among paint manufacturers is associated with the need to improve the product durability and reduce the amount needed for given applications.

Major paint manufacturers are catching up with niche eco-friendly product manufacturers, and many of the environment-friendly paints are becoming 'main stream'. It is reported that in the UK, for example, the organic paint market is worth \$ 4.8 million, a niche, but growing. The building industry is interested in green and sustainable products more than ever before, driven by the demand from the end users and the architects.

Rating green buildings

Currently, the US Green Building Council's (USGBC) Leadership in Energy and Environmental Design (LEED) ratings system is the most popular basis for defining the standards of a 'green building'.

The LEED programme gives points to buildings with non-toxic materials such as zero or low VOC paint and soy-based insulations. By using such materials for buildings, the owners can prevent the chance of causing health hazards from toxic building materials. The LEED programme awards points for other measures to avoid health issues such as flushing the property prior to occupancy, prohibiting exhaust fans in the garage so as not to vent harmful fumes into the house, and building with radon-resistant construction.

Since 1990, LEED has rated nearly 3.9 billion sq ft of commercial property or 7 per cent of the commercial construction market, and the figures are still increasing. For residential projects, LEED has certified around 1,000 properties out of 13,000 that have been registered so far, according to USGBC figures. In India, the following properties have been given LEED ratings: CII-Sohraji Godrej Green Business Center in Hyderabad, LEED Platinum rated; Wipro Technology at Gurgaon, LEED Platinum rated; ITC Green Center, Gurgaon, LEED Platinum rated; and IGP Office Complex, Gulbarga, LEED Gold rated. As the demand for green building is on the rise, consumption of environment-friendly architectural paints will also increase in future. 



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