World natural rubber production is forecast to rise 4.3 percent annually to 12.5 million metric tons in 2013. Gains will be stronger than for synthetic rubber materials, but decelerate in comparison to the 2003 to 2008 period. Favorable natural rubber prices will spur additional planting and more efficient cultivation (e.g., the use of higher yielding varieties, control of leaf blight, the utilization of modern cultivation techniques, improved agronomic practices and the use of chemical yield stimulation) in many of the leading rubber producing nations. Even after accounting for expected price increases, natural rubber will continue to offer price advantages over commodity synthetic elastomers, and demand will also benefit from continued heavy use in tires, and greater use in blends with various synthetic elastomers, where natural rubber improves weathering characteristics. Growing sales of medical rubber products will also aid natural rubber sales.

As has always been the case, natural rubber supply will also hinge on a number of uncertain factors such as the volatility of international politics and climatic conditions. In January 2002, Thailand, Malaysia and Indonesia launched an organization called the International Tripartite Rubber Organization, which operates via the International Rubber Consortium (IRCo). The IRCo helps to determine and enforce supply and export management among these nations, in an effort to maintain a more consistent balance between production and consumption (and hence price). While the cooperation between members has been imperfect, the group has helped to reopen dialogue between the member nations, which had become less common following the collapse of the International Natural Rubber Organization (INRO) in 1999. In 2007, Vietnam agreed to join the IRCo, resulting in four of the world's five leading natural rubber producers participating in the group (with only India not involved).

The Asia/Pacific region will continue to account for more than 90 percent of world natural rubber production in 2013. Output is concentrated in Thailand and Indonesia, which together produced almost 60 percent of the natural rubber in the world in 2008. Other important producing nations include Malaysia,

India, Vietnam and China, with smaller but still significant production in the Philippines and Sri Lanka. Strong production increases are expected in Indonesia, Malaysia and Vietnam, all of which will benefit from recovery in the global economy after the weakness of 2008, improved cultivation methods, attempts to reduce the incidence of disease, and an increase in acreage devoted to natural rubber. In addition, natural rubber manufacturing in several smaller producing nations in the region will rise rapidly, particularly in Cambodia and Laos. In the mid-2000s, the Cambodian government announced plans to increase the area under rubber cultivation in the country from approximately 65,000 hectares to nearly 125,000 hectares by 2020. In Laos, significant planting of rubber trees has occurred since 2002 and as this newer acreage begins to yield rubber, production is expected to rise rapidly.

Unlike many other countries in the region, most natural rubber production in Indonesia and Malaysia occurs at smallholdings, many of which are less than two hectares. While smallholders can convert the raw rubber into sheets at cooperatives, much of the raw rubber is processed in larger factories. The relatively low yields and lack of processing capabilities prevent many smallholders from earning enough to invest in better yielding trees or adopt less labor intensive harvesting methods. These factors limit the ability of much of the country's rubber industry from increasing production dramatically, although some government efforts to improve smallholders' practices and invest in better yielding materials have helped overcome these handicaps.

Outside of the Asia/Pacific region, most natural rubber production occurs in Africa and Latin America, with a small amount of production in Mexico. Cote d'Ivoire and Liberia are the leading producers of natural rubber in Africa, with smaller natural rubber industries in Cameroon and Nigeria. In Latin America, leading producing nations are Brazil and Guatemala. Large scale, commercial cultivation of natural rubber throughout Latin America is limited by a leaf disease called South American Leaf Blight, which is endemic to the entire region. This disease has killed many rubber trees and reduced the efficiency of many of the remaining plants to half the latex produced by an average Asian

tree. While efforts at breeding disease resistant trees are ongoing, the blight is expected to continue to limit natural rubber production in the region.

Currently, the only commercially important source of natural rubber is latex cultivated from the *Hevea brasiliensis* tree. Although many varieties of plants produce polyisoprene in the form of latex, only this species of *Hevea*, the guayule plant and potentially the *Taraxacum kok-saghyz* plant are capable of producing the high molecular weight linear polymer with a 100 percent cis structure typical of natural rubber. The *Hevea* tree is preferred because it yields high quality latex over a sustainable period and is amenable to tapping. Climatic conditions necessary to the production of natural rubber include an average temperature range of 25 to 30 degrees Celsius and average annual rainfall of at least 2 meters evenly distributed throughout the year. As of 2008, approximately 10.5 million hectares (26 million acres) of land were dedicated to the cultivation of natural rubber.

TABLE -1

WORLD NATURAL RUBBER PRODUCTION BY REGION
(thousand metric tons)

Item	1998	2003	2008	2013	2018
World Rubber Production	15875	18935	21950	26900	32050
% natural rubber	41.6	42.8	46.0	46.3	46.5
World Natural Rubber Production	6600	8100	10100	12450	14900
North America:	14	16	18	20	25
United States	--	--	--	--	--
Canada & Mexico	14	16	18	20	25
Western Europe	--	--	--	--	--
Asia/Pacific:	6171	7559	9388	11580	13880
China	450	565	548	600	650
Japan	--	--	--	--	--
Other Asia/Pacific	5721	6994	8840	10980	13230
Other Regions:	415	525	694	850	995
Latin America	125	166	251	295	340
Eastern Europe	--	--	--	--	--
Africa/Mideast	290	359	443	555	655

Source: The Freedonia Group, Inc.